

Rules for Radicals - Settling the Cyber Frontier[^]

by

Riel Miller

Table of Contents

INTRODUCTION: WHAT FRONTIER, WHAT RULES?	1
CHAPTER 1: SETTLING THE CYBER FRONTIER	1
Radical Rules	2
PART I: DISCOVERING THE FRONTIER	4
CHAPTER 2: STUCK AT THE END OF THE 20TH CENTURY	4
Is the Net underperforming?	4
The art of the possible	5
Beyond the end of the 20th century	6
CHAPTER 3: DARING TO TURN THE SHORT-BOOM INTO A LONG-BOOM ..	7
Market Roulette	7
Turning a Short-Boom into a Long-Boom	8
PART II: HOMESTEADING THE CYBER FRONTIER – RULES FOR THE FUTURE	9
CHAPTER 4: UNLEASHING THE ARTISANS	9
Risk and Imagination	9
Rules for Artisans	12
CHAPTER 5: LEARNING AND WEALTH CREATION	13
A Solution in Search of a Problem	13
Staking a Claim to Human Capital	14

[^] Originally published in IntellectualCapital.com from September 1997 to December 1990 (see Appendix for details)

Rules for Knowledge Prospectors.....	15
CHAPTER 6: HIRING IN CYBERSPACE	17
Prior Learning Assessment	17
Making it happen	18
CHAPTER 7: HOW REAL IS VIRTUAL? EMPLOYMENT SERVICES ON THE INTERNET	20
Face to face and non-commercial	21
Free on the net.....	21
Labor market of the future	22
CHAPTER 8: RESOLVING THE CRYPTO WARS	23
CHAPTER 9: BEYOND THE SCAMS – MAKING THE CYBER-BOOM LAST..	26
Foundations for the Cyber-boom	26
Catching-up with the Cyber-Boom	27
CHAPTER 10: FROM HELP HELL TO HEALTH HELP.....	28
Waiting for Doctor Digital	28
Waiting for the Digital Doctor	28
CHAPTER 11: SEARCHING FOR TOMORROW ON THE CYBERFRONTIER	31
Don’t worry, be happy.....	31
Being More Ambitious.....	32
Better Search Engines.....	33
CHAPTER 12: MORAL HAZARDS AND SELF-REGULATION.....	34
A Slippery Slope	34
Beyond Moral Hazard	35
CHAPTER 13: MINTING MONEY ON THE CYBERFRONTIER	37
The virtues of a national currency	37
Will that be charge card or charge card?.....	37

E-cash hopefuls.....	38
Government minted cyber-money.....	39
Stagecoach robbers and techno-stagnation	39
CHAPTER 14: FENCES ON THE CYBERFRONTIER: CERTIFICATION, TAXES AND STANDARDS.....	41
Taking down the fences	41
Is the cure worse than the disease?	43
Fence busters - who ya gonna call?	43
CHAPTER 15: HOMESTEADING IS NOT A GAME ON THE CYBERFRONTIER	45
Why the Net might still give rise to community	45
Turning the possible into the real.....	46
CHAPTER 16: CYBER-CITIZENSHIP	47
Economic Identity	47
Community Identity.....	48
Establishing Identity in Cyberspace.....	49
Cyber-citizenship	51
PART III: A VISION FOR THE MILLENIUM	52
CHAPTER 17: WAITING TO BE WIRED	52
Waiting for technological magic	52
Waiting for economic development.....	53
Why wait for tomorrow?	53
CHAPTER 18: PLANET NET IN 1999?	54
How connected are we?	54
Does it matter?	54
Beyond six degrees - the birth of planet Net.....	55
CHAPTER 19: FROM DOMAINS TO DEMOCRACY – GOVERNANCE ON THE CYBER-FRONTIER.....	57

Rules for Radicals

Tunnel vision57
Global ambitions, planetary inspiration58

Introduction: What Frontier, What Rules?

Chapter 1: Settling the Cyber Frontier

In the film *Butch Cassidy and the Sundance Kid* there is a knife fight, won in style by Butch who asks his opponent what the rules are. In stunned response his competitor bellows “what rules?”, at which point Butch kicks him in the groin. Not much of a knife fight, but the moral is clear: to the winner go the rules.

Today, with the homesteading of the Cyber Frontier just beginning there are many aspiring Butch Cassidys looking to make the rules and win the spoils. More power to them, the frontier needs the intrepid. Their outlaw tactics spur innovation. Their competitive ambition drives the conquest of uncharted and risky territory.

But, the wild west doesn't suit most people. And, as Butch and Sundance found out at the wrong end of a hail of bullets, people don't like having their paychecks or savings stolen. Rule of force is replaced by rule of law, it leads to a wider distribution of winners.

Although today's Cyber Frontier isn't entirely lawless, it still lacks many of the rules essential for it to work. Payment security, privacy, consumer redress and reliable identification of buyers and sellers - to mention a few of the issues - are all inadequate at the moment. But, as befits such potentially lucrative terrain as electronic commerce, the rules and law enforcement are on the way.

For example, discussions at the Organization for Economic Co-operation and Development (OECD) recently ended with an agreement on cryptography guidelines (http://www.oecd.org/dsti/iccp/crypto_e.html). Eventually, once the military in a few OECD countries gives up on a fruitless attempt to limit access to cryptographic tools, identity and security issues will be resolved by easy-to-use software and reliable, regulated notarial type services. Then everyone gets to avoid the possible extra expense of hiring Butch Cassidy's thugs to ensure payment or delivery. Instead, the courts handle these problems, eliminating Butch and his various (dis)services.

Extending basic property rights and enforcement mechanisms to cyberspace may take a little time, but overall these are modest obstacles to development. Technology barriers are even less of a problem as advances in telecommunications, hardware and software capacity are likely to move faster than you can say planned obsolescence.

The hard part when it comes to settling the Cyber Frontier involves determining what kind of rules will actually transform this potentially boundless territory into tomorrow's version of today's vast farms, thriving cities and healthy places to work and live.

Radical Rules

When life was ruled by the rhythm of the sun and seasons it seemed ridiculous to contemplate being ruled by the school bell and factory whistle. But it happened.

Radical rules are the ones that change the way the game is played. Take the introduction of compulsory schooling. It was a new rule that radically changed both labor supply conditions (stopping children from working) and the competitive position of previous generations who hadn't been offered free upgrading of their human capital. Or consider the introduction of the Securities and Exchange Commission with its imposition of radical requirements like common accounting and reporting conventions.

These radical (for the time) rules of the industrial age tended to encourage standardization. Young people emerged from school with a basic set of cognitive and behavioral skills (reading, writing, arithmetic, punctuality and obedience). Such uniformity was good for mass-production factories, armies and centralized stock markets. That's not the Cyber Frontier.

Tomorrow's radical rules will need to liberate as much if not more than they constrain. Just like the phrase 'rules for radicals', the rules for the knowledge economy will seem slightly paradoxical.

One brief example of an area for such new, paradoxical rules is in the realm of assessing what people know. In the past it was fairly safe to consider a high school diploma to be a good indicator of what someone knew - basic literacy and dependability. Employment records, gathered from familiar firms in recognizable occupations, also told a generally intelligible story about what a person knew how to do. These vague indicators of productive capacity were adequate for old fashioned white and blue collar jobs held for years on end.

On the Cyber Frontier the reduction of high search costs, long probation periods and regular failures in finding the right person for that one-off job is what will make the difference between a barren and a thriving settlement. Realizing the full potential of cyberspace will hinge, in part, on the introduction of rules that provide universal, accessible and dependable information about what people know. That way when I need to hire you to cook my next dinner party or design and fabricate my wall paper or check the equations in a technical paper or find a perfect vacation spot - I'll know your track record.

Rules for assessing what people know will help people find the services they need. And, flexible, universal rules that validate what people know will encourage the accumulation of knowledge in its many, often radically innovative forms.

In this way the blacksmith turned assembly line worker (re)turned artisan gets the freedom to create and be creative. At the same time this innovative capacity and its economic viability are facilitated by rules that ensure open and dependable standards to guide transactions and information sharing. Combining the ruleless world of the

Rules for Radicals

imagination with the conventions or rules demanded by a common language that allows unimpeded exchange is the paradox of tomorrow's rules for radicals.

This book is about discovering how the winner's rules of a Butch Cassidy are transformed into rules for winners - the future settlers of a vast Cyber Frontier.

Part I: Discovering the Frontier

Chapter 2: Stuck at the End of the 20th Century

Fontenay-St.-Pere, France - Now for the easy part, I thought. My connection to the Net, at 56k no less, was humming so reaching my goal would be a snap. All I wanted to do was download some decent on-line gaming software and then play, play play. No such luck. Instead I trudged through one site after another, lost in a labyrinth of promotional and insider information for a bunch of shoot-em-ups.

This defeat only served to redouble my resolve. Truth is, I was hoping to avoid disappointing the under-ten year olds I'd promised to WOW with the Net's many treasures.

So, having failed on the frivolous - mostly private sector - side of the Net I went in search of educational - mostly public sector - fun. I did worry that this goal would be a bit tougher since the universal language of action-adventure had to be replaced by the French language only requirements of the local audience. Still, I was convinced there would be something out of the ordinary to impress my waiting public

In the end the language limitation did not make any difference. There were plenty of sites in French, Italian, German and more, if you are into being an e-mail pen-pal or browsing class pictures, educational software catalogues and magazine fare. Big yawn.

Where was the revolution I had spoken so tantalizingly about? Little Massimo's cute personal page about his class trip to the Coliseum did not stir up any enthusiasm. No fooling the youngsters. If the Net is just about looking at on-line catalogues, magazines and e-mail bulletin boards then they are satisfied with - even prefer - their CD-ROMs and newsstand glossies.

Off they went - the so-called Internet generation - to have fun with yesterday's amusements. Leaving me with a gaping sense of unfulfilled potential - not to mention crushed credibility.

Is the Net underperforming?

The children were right of course. So far, at least, the Net offers very little they can't get in neater, faster and more intuitive packages at the corner bookstore, local library or on their home video game player.

Maybe my expectations are misplaced or simply wishful thinking. Why should the Net change things? Did reading, playing and learning change with the advent of electricity or the automobile. Certainly where and when we read, play and learn has gradually changed. But the basic content and nature of these universal human activities remains the same.

Rules for Radicals

Just because digital networks offer fast and easier access to a broader range of content does not necessarily mean that new products and new ways of doing business - for profit or not - will actually emerge. Perhaps all that is to be expected from the spread of the Web are lower information and transaction costs. Significant enough to alter a few organizational patterns like shifting the shopping mall software outlet and bookstore to the Net, but otherwise not much to write home about.

I think this scenario is plausible. Particularly if business and government continue to treat cyberspace as an industry, just another sector of the familiar economy dominated by the mass-production of things or immediately consumed services. With this approach everyone can keep on applying the lessons of the last decade whether it has to do with corporate restructuring or public sector deregulation and downsizing.

Along this path the Net is still exciting since it will let the music retailers and newspaper publishers cut costs by turning their plastic and paper into zeros and ones. Manufacturers can streamline supplier networks. Governments too will improve services and reduce overall costs by introducing, as the French Finance Ministry recently did, direct Internet access to administrative forms that were previously only available as paper documents. Cost and time savings are already significant and will likely increase for the next few years.

Only there is a possibility that the Net could deliver more than just turning today's products into tomorrow's virtual reality.

The art of the possible

I do not pretend to know exactly in which ways the Net could change how we live, what we produce and how we create wealth. But I think I am not alone in believing the Net's full potential will remain unfulfilled if it is only used to make business as usual a bit cheaper. There is a great temptation to imagine ways in which the Net could transform consumers into producers, commuters into villagers, resource wasters into eco-efficient conservationists. Cyberspace could be used to turn physical space on its head.

Instead of waiting for the value-added (creation of wealth) to occur somewhere else and then buying it, tomorrow's consumer could (in a world where most economic activity involves intangible ideas and creative concepts) become a large part of the production process. You would employ yourself a good deal of the time.

Instead of adapting the way we live to the way we work it might be possible to use the temporal and spatial flexibility of cyberspace to do the opposite. Work could come to the worker and home could be the community of people you want to share everyday life with. Even the environment might be managed differently if the Net could be used to reduce the lifestyle penalties so often associated with changing today's resource wasting and polluting patterns of production and consumption.

For some this vision might be tempting, for others it might seem like a nightmare. Furthermore, the Net may end up taking human society in an entirely different direction.

Rules for Radicals

Why then should anyone bother trying to imagine the more radical possibilities that cyberspace has to offer?

Indeed this century has tragically demonstrated how so-called revolutionary hopes can turn into catastrophic repetition of the past. Certainly it is plausible that the opportunity cost (econ dictionary for this term: <http://amos.bus.okstate.edu/glossary/>) of not making full use of the Net's potential could be more than offset by the "opportunity benefit" of avoiding harmful disruption and a possible disastrous conclusion. In addition, continuing along the current trajectory promises a decent productivity payoff and a fair number of new job opportunities for those who service the Net's infrastructure.

From this perspective tackling bigger problems like mass-unemployment, destruction of the earth's ecological assets, world hunger and war are not and should not be on the Internet agenda. Leave the art of pursuing the possible alone.

Beyond the end of the 20th century

I disagree. Experience shows that a few bold rules, like a republic's constitution, can go a long way towards creating the long-run conditions for experimentation and innovation. In turn these frameworks provide the foundations for massive improvements in the human condition. The problem at the moment is that both governments and businesses are generally stuck with the policies and operational models that suit the twilight years of the mass-production/mass-consumption era.

Where are the daring, call them revolutionary in its old liberatory sense, initiatives?

In today's policy climate Christopher Columbus would never have been funded. Even as everyone celebrates the "new" there is a surprising degree of caution, particularly when it comes to the Internet. Instead of embracing a spirit of exploration and experimentation, prudence reigns. In the weary fading years of a passing system this kind of quiescence might not only be understandable but also preferable. At the outset of the development of cyberspace this lack of courage could well condemn future generations to slower rates of improvement in their living conditions.

Do not get me wrong, I am not arguing for a magic formula or dictating what should happen - just the opposite. Take the example of my discouraging experience with getting the children interested in the Net. My mistake was probably trying to hold their hand, keeping them from exploring on their own. They need to be able to build their own webs in cyberspace, stake their own claim. Only the policies needed to make that possible are not in place.

The young homesteaders out on the Cyberfrontier need laws and rights, to privacy, to identity (their citizenship), to anonymity, to the control of their personal health, financial and educational records. They need to be assured access to the Net regardless of their age or income or location. They need to have democratic powers to make decisions about the future of their virtual reality. They need a constitution for the future if they are going to take us beyond the 20th century.

Chapter 3: Daring to Turn the Short-Boom into a Long-Boom

Les Arcs, France - First the good news, I did find a kind soul at the Office of Tourism willing to let me log on to the Net. Now the bad news, the version of their browser couldn't handle frames and the sites I needed to visit were unable to adjust. A sad story of my daring, but ultimately foolish effort to free myself from the burden of lugging computer equipment everywhere I go. It isn't the kindness of strangers that is lacking. It's the consideration of users needs by so called service providers hell-bent on the latest technical upgrade.

So I ended up voting with my fingers by using the telephone, not the Net, to do my business. This is the market at work. I used a competing technology and service because the web page designers forgot about the part of the market that lacks the latest software. Question is: when will my message get through to them?

Market Roulette

Sometimes firms and investors react quickly, other times very slowly or not at all. Markets can be wonderfully responsive when there is readily available financing, strong demand and functioning technology. All three ingredients were in place last year when electronic commerce started to take off. Baby boomers and venture capital funds were ready to finance the Net. The connected consumers, substantially wealthier than the average, provided a strong base for effective demand - not just a vain expression of need or desire. And of course the technology was in place in the form of the network protocol TCP/IP, the web browser interface and powerful microprocessors, all initially developed with public funds.

What happens when one of these three crucial ingredients is missing? Usually nothing happens if an entrepreneur can't get funding or clients or the tools necessary to meet the consumers price point profitably. It isn't that the market is malfunctioning, just the opposite. Without a decent prospect of making a return on the investment there will be no response by market players no matter how great the need or amazing the technology. If just needing something was enough we'd already have cures for tuberculosis and malaria. But these are poor people's diseases which don't tempt much investment. Not enough purchasing power out there to justify the risk.

My guess is that the same logic lies behind my disappointing experience with an incompatible browser. Why bother to spend developers' time and investors' money on consumers that don't have the latest browser software? After all, the more technically up-to-date part of the market is probably the most interested and the best able to afford the web based services.

Simply put, it isn't a flaw in the market that leads to a failure to deliver, that's the way it is supposed to work. But this is also the reason why the long-boom will only be a short one if there aren't major initiatives that go beyond the narrow logic of the market and reflect collective or general society-wide interests. The challenge of turning the current

Rules for Radicals

high-tech bubble into a rising tide goes well beyond letting the market work its magic by reducing the price of the home PC to under \$1,000. That's the easy part.

Turning a Short-Boom into a Long-Boom

The plausibility of the argument that today's short-boom will turn into tomorrow's long-boom turns almost entirely on the possibility that the Net may, one day, make it feasible to live in a truly transparent society. A world where the vast majority of people not only have open access to information but are also able to make use of it. Achieving this degree of transparency calls for the introduction of new legal, economic and social frameworks that go well beyond what private market players alone can or should be expected to deliver.

More than ever knowledge will be power and the powerful will oppose transparency whenever they can get away with it. As a result there will need to be strong legal incentives (or penalties) that ensure disclosure and openness by individuals, businesses and, of course, governments. Equally crucial will be those rules that make global electronic commerce both safe and accessible for all participants - from the consumer looking for simple legal recourse regarding product liability to a start-up company seeking unobstructed market entry. Last, but not least, are the so called social policies that are the only way to foster equal opportunity in a world that is still so profoundly unequal.

Hitting these targets won't be easy. But without strong assurances that accurate information will be made universally available the dream of friction free transactions will collapse under the high cost of finding and verifying what you need to know. Failure to realize the highly ambitious goal of a global commercial code will leave electronic commerce exclusively to the big players with the brand names and clout to reassure consumers and police suppliers. And shying away from the cost of assisting the excluded from not only accessing but making real use of the Net's information riches will eventually stifle the development of important markets and impose unsustainably high levels of social instability.

Instead of running scared or urging excessive caution when it comes to trying out new avenues for collective action, those who place their hopes in the possibility of a long-boom need to take Ester Dyson's adage to heart: "Always make new mistakes". As much as this slogan applies to innovators and entrepreneurs, it is also pertinent to those initiatives where democratic accountability holds sway. Without daring to experiment in the field of public policy - implemented or not by government bureaucracies and courts - there is little chance of turning today's short-boom into the long one discussed in last week's edition of *intellectualcapital.com*. And there is even less hope that those who are unable to access or use state-of-the-art software will be able to make their much needed contribution to this brighter future.

Part II: Homesteading the Cyber Frontier – Rules for the Future

Chapter 4: Unleashing the Artisans

Paris, France - On Sunday, when I risk riding my bike around Paris, I often attach a nifty third wheel that allows my six year old to pedal behind me. It is a sort of detachable tandem for tots. As we glide by the Seine we get a lot of admiring comments. Every now and again someone stops us to ask where they can get one too.

Problem is that I found the product on the Net and bought it directly from the Canadian manufacturer. That's when the smiles fade. It's too daunting, the prospect of using the Internet, navigating customs, paying the shipping costs and then worrying about how to get it repaired later on. So another little dream winks out and we pedal off into the sunset.

As a result I'm regularly reminded of the Net's current limitations. Not that these obstacles to electronic commerce really worry me. I'm convinced that the basic infrastructure will get built. In the not too distant future the people out on the Quai du Louvre for a Sunday stroll will be able to afford an Internet connection. And even more importantly be able to figure out how to get all the software, hardware and cables working. Eventually, the bike manufacturer will also find a way to put their product on the Net and perhaps OECD discussions (like the one's taking place in Turku next week http://www.oecd.org/subject/electronic_commerce/documents/emergence.htm) will cut away some of the cross border thicket that tend to make global trade almost unaffordable for small players.

No, for me the real problem is a bigger, more long term one. It is how to make good on the still distant possibility that we may get beyond the habits and laws of mass-production and consumption.

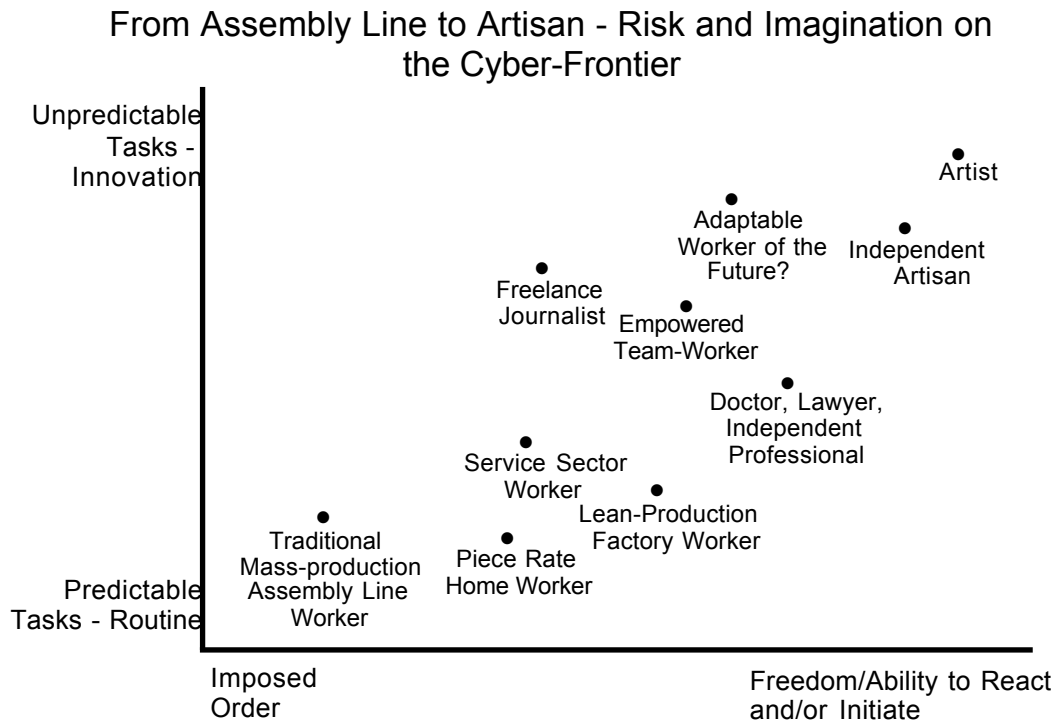
Risk and Imagination

I'm looking for an entirely different solution to the problem of getting a detachable junior tandem to Paris. Make it here. After all, there are sophisticated turnkey manufacturers just around the corner. If they aren't quite ready to make one-off customized bikes (at a reasonable price), they are getting close. Especially when they can order the parts, via the Net from around the world.

Unfortunately, the real obstacle isn't the supply side capacity to actually manufacture the goods (or service). There is a more profound barrier, one that is more difficult to overcome. It is the basic passivity built into our industrial era society where the distinctions between conception and execution, production and consumption are so deeply entrenched. We have great difficulty making the leap from admiring shopper by the banks of the Seine to broker of intellectual capital and initiator of a production process.

Rules for Radicals

One way of looking at this gap between conception and execution is illustrated in terms of occupations (in very rough and ready averages) in the diagram below. The two dimensions present possible combinations of work task predictability (innovation versus routine) and freedom (initiate/imposed) with which the task is executed. At one end of this two dimensional space (bottom left) is Charlie Chaplin's assembly line worker from Modern Times and at the other end (upper right) is an unconstrained, unpredictable artist.



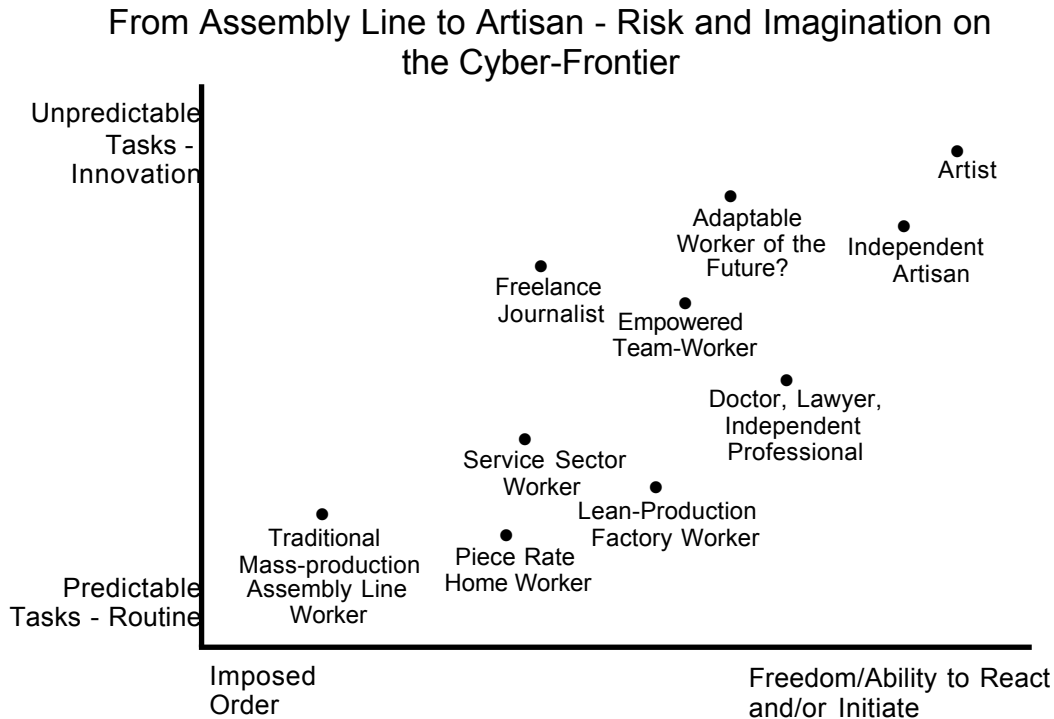
©Riel Miller, 1996

Shifting a large part of the population from one quadrant of this space to another would involve a massive change in how we conceive our roles as workers and - because it is the flip side of the coin - as consumers. Think of the skilled farmer of the previous century making the transition from owner-operator to assembly line worker. They moved from a world where they had considerable freedom to decide what to do (even if the tasks and often technology were fairly stable) to the confines of the factory with its precise, authoritarian routines.

As consumers they also experienced a big change. Once again the diagram below offers a rough sketch of the various combinations of passive and active, minimum and maximum choice that characterize different consumers. The most limited is the couch potato that accepts without question which ever marketing blitz happens to grab their attention. Self-producers such as farmers manage to add considerable knowledge to their own products thereby customizing their choices. But at least in the past rural isolation severely reduced the available options (even with the Sears catalogue). Most liberated to

Rules for Radicals

customize their consumption and conjure up as of yet uninvented choices is the future Cyber producer/consumer.



©Riel Miller, 1996

Making the transition from passive to active consumer will not be easy. People have lost or never bothered to acquire the knowledge and individualistic tastes that could drive customized consumption. After all today's niche consumer that orders a custom pizza at the local restaurant isn't exactly co-creating. Nor is the Internet shopper, clicking on the virtual equivalent of the Sears catalogue, really entering into the production process or becoming a significant part of the value-added chain.

Making the change from a world of assembly lines and shopping carts to one of artisans and co-creators will be difficult.

As we move from today's cyber-frontier to tomorrow's cyber-settlement will it be possible to create a world where the dominant role of the technical specialist no longer determines most of our choices at work, in the supermarket or on the tube? We don't seem to be equipped to replace their in-depth, expert's knowledge. Nor do we have much incentive. Why bother to invent new products or trouble our imaginations when someone with experience and schooled in science or marketing is paid to do it for us?

In the past poverty and war often pushed the farmer into the factory, what might invite us to move from passivity to activism in the future?

Rules for Artisans

Rules for artisans are about ways of reducing the risks and encouraging everyone's imagination without incurring huge transaction costs. Advancing beyond the Net's capacity to simply improve transparency to actually reducing the risks of collaborative production and improving the incentives to use our imagination will involve overcoming a whole series of obstacles. At a minimum two major issues will need to be addressed.

First, in order to reduce the risk of entering into the production process people will have to have some way of verifying competencies (see last month's article <http://www.intellectualcapital.com/issues/97/1009/icbusiness.asp>). Rules in this domain serve to reduce the risk of collaboration, helping to ensure that a co-creator actually has the ability and track-record to offer a safe design for a bicycle. Without these kinds of assurances the cyber-consumer sinks quickly back to the safer ground of familiar brands regulated by standards associations and national safety laws.

The second set of rules that need to emerge involve the incentives for artisans to develop and share their ideas. Artisans will only settle the cyber-frontier if they are compensated quickly and surely for the use of their intellectual property. Today the shareware system (distribution of software for free with a request to compensate the creator if you end up using their product) remains at best marginal. Generalizing the principle of wide open distribution of intellectual property will require the development of accepted digital watermarks and micro-payment systems that ensure compensation for the use of a co-creator's ideas worldwide.

Introducing rules that reduce risks and improve incentives on the cyber-frontier will help to liberate tomorrow's radical - the creative artisan/consumer. But there will still be many hurdles to overcome such as the currently ingrained culture of deference to technocratic authority. Imagine a world where instead of pushing the young to absorb innumerable obscure facts and exclusionary vocabulary so that they become more technically "skilled", the aim is to allow the deepening of personal taste and creative self-expression. Imagine a world as different from the farm as the factory.

Chapter 5: Learning and Wealth Creation

Paris, France - Back to school and back to worrying about the educational system. In Europe, no less than elsewhere, concerned parents, politicians and educators are wrangling over the future of education. Debates over standards, teaching methods, career paths and technology all swirl together in a disconcerting, murky mixture. By way of contrast, on the cyberspace frontier, all is sweetness and light. No one is worrying, yet.

For the adventuresome pioneers, whose educational profile already tends to be on the high side, the Net offers a huge base for collecting and sharing information. They don't have to worry because there is little doubt that as a research tool the Internet is rapidly becoming a superlative resource. Everyone else, and that's most people, are either uninitiated or unable for reasons of income or technical know-how or interest, to access the vast learning resources of cyberspace. They're not worrying because they are out of the loop. It could go on like this for a long time. Those in the know taking advantage while the excluded remain blissful in their ignorance.

Such a scenario will reproduce the cleavages, advantages and disadvantages that characterize the existing educational and social systems. The Net won't magically solve the learning challenge. As past experience with other technologies like television and film has amply demonstrated, it isn't the tools that transform the learning process. People, appropriately enough, remain stubbornly human. When it comes to learning we tend to resist the efficiency enhancing miracles that machines often produce in places like factories, research institutes and financial markets.

Sure, information technology and the Net are improving the speed and reducing the cost of getting data. But databanks are neither knowledgeable nor wise. The person sifting through the torrent of information pouring along the dataflow still needs, as always, a desire and ability to learn.

The question then is whether or not the rich learning resources, the so far relatively unexploited gold mines and fertile plains of cyberspace, will be widely developed or not?

A Solution in Search of a Problem

Putting the cyberspace solution, the ease of sharing information, to work on the learning challenge will require redefining the problems. Right now the demand for constant learning is fairly limited and the potential supply strongly constrained by entrenched interests and old habits. At a minimum, two key issues need rethinking.

First it will be crucial to move away from a supply driven system that imposes instead of serving the learning process. Today's dominant educational model and its associated problems reflect an approach well suited to the transition from agriculture to industry. Compulsory, hierarchical schooling was highly successful at inculcating behavior patterns and basic skills consistent with a work world that is now in decline. A new

Rules for Radicals

problem needs to be evoked, how can people take control of their own human capital. Here the potentially rich learning resources of cyberspace may come to the rescue.

Second it makes no sense to exhort people to learn when they are cogs in a machine or executors of other people's ideas. Instead it will be essential to radically reverse the production process so that the intellectual value-added is created through the joint efforts of the consumer and the artisan. That stands on its head today's mass consumption model, where passive workers and consumers accept ideas, products and marketing from a few creators. But for this to happen people, as inventive consumers and producers, will need to have reliable information about each other's competencies - evidence of their track record that confirms what they have learned, what they know how to do. After all, there is no point in a consumer collaborating with someone lacking the appropriate skills to produce their car, dance tune or evening meal.

Here the problem is no longer how to get a team of factory workers to be creative, it is how to make everyday life creative. Again, faced with this new problem there may be a better reason to develop the promise of cyberspace's wide-open frontier.

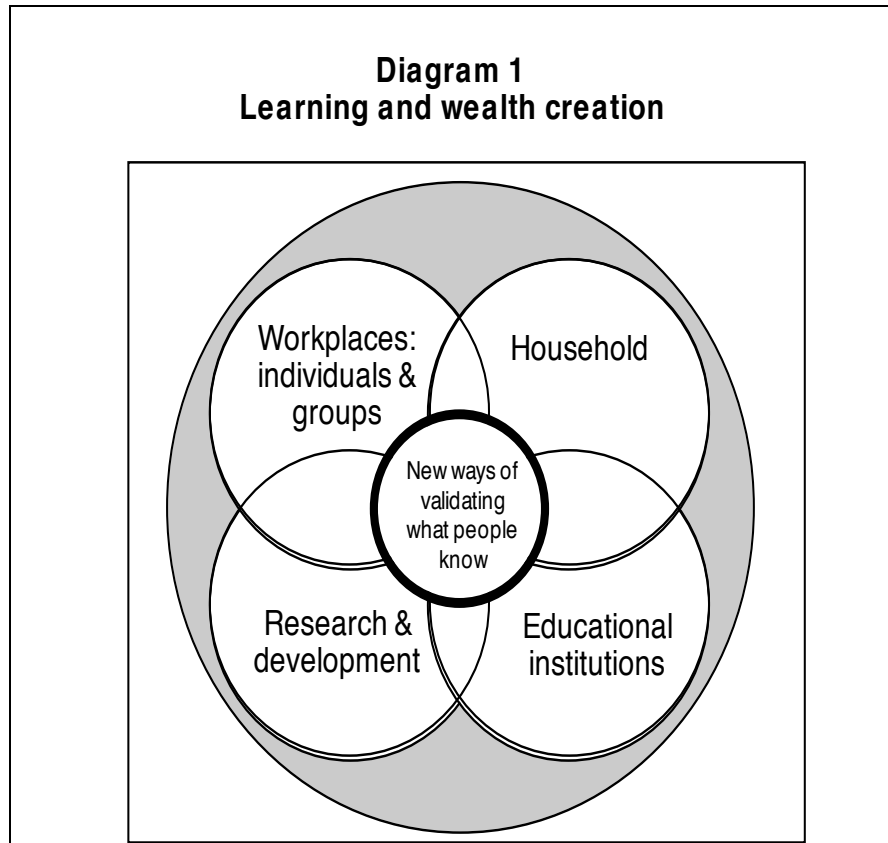
Staking a Claim to Human Capital

For most of human history knowledge was transmitted directly from one generation to the next by the family. Mothers, fathers, grandparents and siblings passed on the lore and insights of accumulated experience. It doesn't take much effort to imagine the criticisms at the outset of compulsory schooling (and still today amongst those who, for instance, resist sending girls to school in places like India). Many complained about the cost and utility of sending children, who were already able to work and learn while doing household or farming tasks, to a strange place, full of strangers' children and an even stranger teacher. Why bother?

Today the answer seems obvious. Reading, writing, arithmetic and an awareness of the larger world were prerequisites for the mechanization of farming in rural areas and advances in industrial organization in cities and towns. From this perspective debates over school reform or the role of technology in education miss the point. Instead of trying to fix yesterday's teaching factory (the school) it might be worthwhile to consider ways of creating the learning society of tomorrow.

Rules for radicals once again enter the picture. Past visionaries who saw a future filled with school children and factory workers managed to radically alter one of the basic institutions of everyday life. In the process they changed the way knowledge is passed on from one generation to another and the behavioral patterns and expectations of a previous era. An equally radical solution emerges from a different vision of how learning might be validated in the future.

The diagram below outlines four of the basic areas where people learn and produce wealth, if not always income. In each of these spheres learning takes place as part of everyday activities, but unfortunately little of it is recognized.



Consider, for a moment, that one the best ways to learn and advance knowledge in general is through experience and systematic experimentation. But what are the incentives for taking the risk of running an experiment such as starting a business or coming up with a product or process innovation? Well, if you win and your new start-up prospers or your innovative breakthrough is a hit then you get the jackpot. But if you fail, and many experiments do fail, then what? Do you get credit for what you learned? Can you point to all of your new competencies and go to the bank?

It's as if the gold prospector, after investing the time and taking the risks finally strikes gold and then is unable to stake a claim. Little wonder that there are so few knowledge prospectors seeking the learning gold of cyberspace. Little wonder that consumers and producers are not engaging in free-wheeling collaborations and a full-fledged sharing of ideas. Cyberspace may open up these possibilities because it makes it easier to gain knowledge and share it, but without rules for recognizing claims the gold rush will fail to materialize.

Rules for Knowledge Prospectors

For society as a whole to begin tapping into the wealth of knowledge that cyberspace makes available it will be necessary to reduce the costs and risks of prospecting - investing in learning. In the future what people learn how to do, regardless of how they came by the knowledge, needs to be recognized. This isn't about collecting data or stealing someone else's copyright, it is about a person's capacity to add-value in

Rules for Radicals

production. Rich or poor, from Harvard or the back yard, if you can demonstrate a particular competency you should be able to validate your track record, the learning that is the fruit of your labor.

At first, of course, systems for validating people's competencies will be difficult to establish and acceptance will take time. But it also took time for the little red school house to be transformed into the massive educational infrastructure we take for granted today. And, if we look around, there are many moves afoot to improve the way that knowledge is assessed and recognized (for more see *Measuring What People Know*, OECD, 1996 <http://www.oecd.org/sge/au/pubs/measure.htm>). In firms, intent on improved training and management of human capital, efforts are underway to provide transparent and relevant evaluation. In the educational system both teachers and students are looking for better ways to assess what has been learned - inside and outside the classroom. In the community, as employment patterns change and social structures shift, there is a desire to assess and make better use of the available human capital - our greatest resources as we are so often reminded.

Cyberspace can more than help to create the demand, incentives and transparency upon which the advent of a learning society will depend. The problem is how to provide rules for radicals appropriate to this new territory. Without flexible and neutral ways of validating what someone has learned it will be much more costly and difficult to unleash the Net's potential. But, once the rules are established for staking a claim to what you know how to do, then both the learner and the artisan will be liberated. Then, like the search for blackgold to quench the thirst of the internal combustion engine, the quest for knowledge will become the goldrush of the cyberfrontier.

Chapter 6: Hiring in Cyberspace

Thessalonika - At first it seemed like a perfect Internet success story. We were looking for an “au pair”, one of those young people that helps take care of the children and pitches in around the house. After no success with agencies or word of mouth I went searching on the Net. It did not take long to find quite a few sites that promise to match-up employers with employees. Brilliant, I spell out my requirements, while prospective au pairs submit their qualifications and interests. Demand meets supply, in real-time!

So I registered, posted my job offer and went looking through the work wanted notices. I found over a dozen good candidates and sent them all messages. Not one answered. Other sites showed the same lack of action. This was not a real-time market, it was fiction. People telling each other stories without having to bother about the when and where. Good chat, but lousy economy building.

Once again the Net’s promise bumps up against the line that divides the tangible from the virtual. Certainly the technology is not to blame. Cyberspace does make instant, global connections possible. What it does not do, at least not automatically as part of the basic technology, is provide a way to verify information. Some of the time this does not matter, it is enough to follow the rule of “buyer beware”. But usually when you hire someone to do a job it matters a great deal if the information they provide about their competencies is accurate **and** verifiably so. Furthermore, in the knowledge economy where many tasks cannot be specified in advance since they involve creativity, it is essential to have access to meaningful assessments of a person’s capacities or track-record (not just their diplomas or job titles).

Unfortunately, getting such high quality information is not just a problem on the Net. Does this mean that the potential of the Internet to create a more efficient, knowledge-age labor market will always be out of reach? Luckily, before I could get too discouraged about the Net ever realizing its full potential, I left for a conference in Thessalonika, Greece on “Identification, assessment and recognition of non-formal learning” organized by the European Centre for the Development of Vocational Training [LINK: <http://www.cedefop.gr/>]. Help may be on its way.

Prior Learning Assessment

Indeed, this is not a new problem. I even wrote a column on this question in this e-zine in October of 1997, ancient history by Net standards [LINK: <http://www.intellectualcapital.com/issues/97/1009/icbusiness.asp>]. In the abstract, the solution to the problem of figuring out what people know is to assess, test or otherwise validate their competencies. Once they are “certified” by a known and verifiable institution as a capable au pair, for example, then the job market transaction becomes much easier. Although this way of improving the quality of labor market information might seem obvious, it has taken quite a few years for the message to get through. Six years ago, when I was working on a book on this topic (Measuring What People Know: Human Capital Accounting for the Knowledge Economy) [LINK:

Rules for Radicals

<http://195.33.64.148:8765/cgi-bin/OECDBookShop.storefront/1578523181/Product/View/911996031P1>], I encountered considerable resistance to the basic idea of prior learning assessment (PLA).

Today there is general acceptance that verifying what an individual knows how to do, regardless of how they acquired the knowledge, offers a range of benefits. First of all it saves resources since it avoids forcing someone to waste time getting trained for a skill they have already mastered. Second it helps to ensure a better match between skills and tasks. Lastly it provides the incentives for learning by doing and taking the risk of accumulating wisdom through innovative experimentation (even if a fair share of such ventures fail). With the proper incentives in place the quest by businesses and governments to encourage lifelong learning might finally succeed.

Making it happen

Accepting that PLA is a good idea still does not solve the problem of how to do it. Fortunately attention has now turned to the more practical questions.

In Thessalonika a wide range of primarily European approaches to PLA were presented. From Ireland to Finland and back through Italy and France efforts are underway to develop the tests and specific credentials needed to give people credit for what they know. In the US a new occupational classification has been constructed [<http://www.doleta.gov/programs/onet/>], many testing services are both assessing people as well as selling the evaluation methodologies, and there is even a pilot project that aims to use so called “smart cards” to create a portable record of a person’s certified skills. Although much is usually made of the differences between American and European practices, when it comes to competency assessment the measuring sticks generally come from the current employment and educational categories.

Referencing human capital to mostly industrial era jobs and credentials (even those in the service sector) poses two major problems. First, measuring what people know using yesterday’s yardsticks is too rigid and narrow. Think of it in terms of the difference between two types of Internet search engines such as Yahoo and Alta Vista. With Yahoo there are pre-set categories which, even if up-to-date, still offer a relatively rigid division of the world into a few subject headings. Alta Vista, or any one of the full text search engines, offers an open ended way of finding the exact bit of information that you are looking for using the words that correspond to your specific request. Both are useful, depending on your needs and preferred search strategy. Similarly, a knowledge economy that depends on creative, free-form association between prospective employees and employers, will need PLA that moves beyond set categories.

Only, and this is the second problem, these categories are sustained by powerful vested interests and so far little progress has been made in getting beyond the conflicts. Educational institutions, private or otherwise can barely tolerate PLA since it undermines their long-standing hold on the granting of certificates of achievement such as high-school diplomas. Worse it reduces the amount of time (and money) students are required to devote in order to get certified. Keeping PLA in the Yahoo mode of pre-defined

Rules for Radicals

educational and occupational categories at least maintains the educational establishment's oversight role. Companies largely share this desire to restrict the recognition of an individual's human capital to rather fuzzy and outdated certification categories for the obvious reason that wages can be set at a lower level if there is little way to affirm acquired competencies. Potential employees have to prove that they know what they know, and in the interim they can be paid less. Finally, it is one thing to give lip service to the idea that human capital is now the mainspring of economic growth. It is an entirely different matter to create a system that might make it practical for the owners of human capital to cash-in on their ever growing share of the means of production.

Still, despite the opposition, the needs of the knowledge economy are driving PLA systems forward. The e-lance (for free-lance) economy [LINK : http://www.hbsp.harvard.edu/hbsp/prod_detail.asp?98508.html] requires better ways of validating the unique skill mixes and track records of people looking for projects to work on. In my view, building on what I heard in Thessalonika, the best bet might be a patent office model where people could have their unique mix of human capital registered. That way a whole range of different certification and assessment organizations could spring up to help people gain registration of their particular competencies. No need for pre-set categories, but there would be significant role for supervision and verification of the certification process.

A new human capital patent office could combine the lessons learned by technology patent offices over decades of legal and methodological experience with the cutting-edge techniques and business models of cyberspace. Reaping the best of both worlds would allow me to do full-text, free-form searches for a person with the child care skills I need. And, once I found the person that matched my requirements, I would not have to worry about verifying their competencies. Hiring in cyberspace would turn from fiction into reality.

Chapter 7: How Real is Virtual? Employment Services on the Internet

Paris – Amazon.com's success in dematerializing the bookstore has unleashed what seems like unlimited enthusiasm for the virtual over the tactile. One internet pioneer who has not succumbed to this fever is Jean Marie Cuda. In building up Cyber Emploi (<http://212.208.50.221/parisjeunesemploi99/proto.htm> – in French only) he has struggled hard to find the right balance between the virtues of the Net and the storefront.

Over the last year Cuda has created an employment service for young people (16 to 25) that live in Paris and are out of school and looking for work. Over 1200 have come to his modest, street level offices in the student district to register, use the Internet terminals, receive career counseling and job search training. When they first come in off the street the young people are divided into two groups. One group consists of those that are able to give a clear answer to the question of what they want to do in their working life. The other group, unsure about their predilections, aptitudes or even what particular jobs exist, are enrolled in a career counseling program run in the basement seminar room by France's national employment service (ANPE at <http://www.anpe.fr/> - in French only).

Given clear employment goals the next step is accessing the Internet. Here again the uninitiated are given a chance to get up to speed about computers, browsers and the Net. Once they are ready to surf job seekers proceed to the main tool for actually finding employment: the Internet site Cuda and his three co-workers have constructed over the past year – now at version 2.2. Using carefully annotated hyperlinks the site guides job seekers to a few hundred thousand job listings in France and through-out the world. The site also provides links and comments on sites that offer further training and general recruitment services. There is a section for companies that post job offers on the Net along with a link that goes directly to the recruitment pages. Finally in the help part of the site Cuda and his team have authored a glossary of terms used when searching for a job, a lexicon that makes it easier to figure out how to use the Net and an updated list of job fairs taking place in the Paris region.

What really stands out is that all of the links on Cyber Emploi's site have been assessed so that brief thumbnail descriptions can be provided and users can be sure that when they click on a link the next screen will take them to the employment relevant needle so often buried in the vast haystack of another organizations web site. As a result Cyber Emploi's site is not only well designed, it also contains large amounts of original and useful content.

Cuda knows that his site contains a lot of value added. He even knows that he could probably sell access or go entirely virtual, cutting out the cost and effort of maintaining the storefront operation. But he refuses take either of these paths. In part this is because of his personal commitment to helping young people with the difficult transition from being out of school to being in work. Yet it is also because he knows that the definition and on-going strength of his product – helping young people get a job – is deeply rooted

Rules for Radicals

in the tactile and non-commercial relationships he can forge by combining the tangible and intangible.

Face to face and non-commercial

There are a number of reasons to prefer the mix of tactile and virtual to just one or the other. First, most obviously, there is the additional information that comes from mixing the two sources. Face to face discussions provide a rich understanding of the client and continuous direct feedback concerning the utility and accuracy of Cyber Emploi's Internet site. No doubt providing space and time for human contact is costly in terms of rent and salaries, but it is an invaluable source for the continuous development and refinement of the service.

A second, less product oriented reason for sticking with a mixed format is that it expands the market to a much broader range of young people by covering both the networked and non-networked worlds. Lastly there are the ancillary services, like career counseling, that can be offered either through direct conversation or by electronic mail in accordance with the client's preferences. For instance there are those people who feel more comfortable admitting that they do not have clear career goals when they are typing behind a distant screen, while others need face to face contact.

Being able to reach out to the full diversity of young job seekers is what matters for Cuda. That is why he rejects the idea of going completely virtual with his service. A crucial segment of his market needs to be able to walk in to a center where they get personal attention, career coaching and access to the costly, sometimes intimidating and often confusing Internet. On this score I think Cuda is right. At times enthusiasm for the Net's impressive powers of communication and outreach tend to obscure the fact that it remains highly inaccessible as well as inappropriate for certain activities. Funding storefront employment services makes sense as a way to support a diverse and neighborly community.

Free on the net

Where the question gets more complicated is when it comes to the commercial implications of Cyber Emploi's site. Cuda is disturbed because he has found out that there are commercial employment services that are selling the information posted on the Cyber Emploi site. Not a surprising outcome given France's low levels of Net usage, the still rudimentary navigational skills of many people that do use the Net, and the considerable value of the information on the site. Clearly, both Internet access to Cyber Emploi as well as the design and data collection methods for the site could be turned relatively easily into commercial, for sale products. Just putting up copyright restrictions and taking initial steps to enforce them would get the ball rolling towards a commercial launch. Only moving along this path would be a mistake.

There are two main reasons why I think Cyber Emploi should remain free on the Net. The first is because the information gathered by combining a storefront employment service with an active Internet site is relatively unique and should be available to

everyone who wants it – even those that cannot pay. For me subsidizing the collection and dissemination of this kind of information makes sense. The second reason for keeping Cyber Emploi free is related to the broader questions of the economic role of the Internet and the kinds of business models that will emerge in cyberspace.

Labor market of the future

As long as Cyber Emploi remains freely available as a taxpayer subsidized service there is little harm done if other commercially oriented enterprises use the same information to make money. Although Cuda is deeply ambivalent about this prospect he does see his project as one of the many stepping stones towards a future where intermediaries disappear altogether with labor market demand and supply being simply a direct relationship between someone who needs something done and the person able to do it. Essentially the job market becomes a sort of permanent Ebay auction.

Getting to such a fully decentralized market is still a long way off. One of the main reasons, treated previously in this e-zine (<http://www.intellectualcapital.com/issues/issue189/item2541.asp>), has to do with the difficulty of validating what people know how to do. But another major problem, one where Cyber Emploi could make a difference, is how much faith to put in the person or enterprise that is offering a job. Right now it is much easier for a big firm or large, widely advertised employment agency to gain credibility and job applicants. Without easy and reliable ways of finding out about potential employers smaller players are at a disadvantage. Even the excellent Net based upstarts like Monster.com (<http://www.monsterboard.com>) or C|NET's job seeking agent (<http://findjob.cnet.com>) or the more high-end and established services like the one offered by the Wall Street Journal (<http://careers.wsj.com/>) all face serious credibility problems since there is currently no truly reliable way of checking either the job offer or response. In the end these are just glorified forms of classified advertising, not anything close to the so called "revolutionary" breakthroughs promised by promoters of the Internet.

Maybe Cyber Emploi, with its approach of adding-value by checking out web pages that offer jobs, could contribute to a break with the past. By assessing the credibility of sites listing employment opportunities the City of Paris' Cyber Emploi could help small scale employment agencies to attract more and higher quality applicants for posted jobs. In turn this would pull in more job offers. As a result small employment agencies could flourish since the usual risk premium attached to their services would be reduced. In fact a more general scheme for assessing employment agencies might even help to launch the ideal Net based solution to job hunting – a software agent that can troll the Net looking for perfect fits. Here the problems are similar to the pricing robots that go looking for the best price available from all of the vendors on the Net. Not all of the vendors allow open access to their catalogues or prices and as a buyer you do not know anything about the credibility of the seller. This is one of the reasons people buy from Amazon.com or Barnes and Noble even though there are plenty of small time book sellers out there on the Net.

Once again, settling the cyber frontier is not as easy as it looks at first sight. But with the proper infrastructure in place the virtual might just become real.

Chapter 8: Resolving the Crypto Wars

Paris - **NO**, says giant credit card company in a full page ad in the latest issue of Wired. No to what? No to getting any credit if you abuse your card. Oddly, I'd sort of expected a more positive message. Just before Christmas, with everyone banging the electronic commerce drum, the ad should have said **YES** you can shop safely over the Net. What gives? Why would a credit card company spend money in the leading Internet magazine to discourage rather than encourage spending - especially with consumer confidence regarding Net based transactions still on the low side?

I think I have one of the answers. Sure, personal credit problems are on the rise, but the worry lurking behind the scenes is fraud. The risk that people use someone else's credit card number over the Net. This could nip electronic commerce in the bud.

In the world of atoms, where we meet face to face, this isn't an issue. When asked, you present an identity paper with your credit card. Over the Net it isn't so easy. Without much problem you can scramble your transmission so that even the National Security Agency can't break the code, but heck you could still be a dog with a bad credit rating using your master's card. One part of the problem - secure communications - is being solved, regardless of what governments have in mind, by the proliferation of easy to use software that automatically encrypts transmissions. Verifying identity, on the other hand, remains a mess.

What we have is an impasse. Legislators and governments fighting to restrict access to cryptography and Internauts trying to ensure the right to privacy and free access to strong cryptography. In this battle you are either for or against opening Pandora's cryptography Box.

Should the story continue to play this way there is a good chance that almost no one will be happy. Clearly vendors and credit card companies have a lot to lose if fraud proliferates even before electronic commerce has really got off the ground. Governments from Washington to Paris are already peeved because of the world-wide spread of cheap, easy to use and easy to copy strong cryptography software. Consumers should be somewhat unhappy because they are ending up with a solution where impregnable crypto is being used when it isn't necessary while verifiable identity is still hard to establish. Maybe the only winners are the hardware and software companies that end up supplying slightly more powerful chips and programs that are able to encrypt everything on the fly.

At the moment what looks to be happening is just the opposite of the hype about information technology. Instead of tailored solutions that fit specific needs and costs we're likely to end up with a blanket of strong cryptography and a patchwork of uncertain identification.

Rules for Radicals

A better solution is not hard to imagine, but it requires a change in perspective. As I argued previously (<http://www.intellectualcapital.com/issues/97/0911/icbusiness.asp>) a modest initiative to extend citizenship rights into cyberspace would solve not only the question of equitable access to a verifiable identity but also eliminate both the credit card fraud and crypto overkill problems.

Once a credit card company or a vendor or a consumer is able to verify the identity of other side of a financial transaction the rest is easy. With the buyer and seller's identities verified it then becomes a simple question of whether or not a person's credit rating is adequate or if the consumer is actually in touch with the vendor they really wanted, not some impostor. In the vast majority of circumstances all that is needed is verification of identity. Just like everyday credit card transactions in the physical world we don't worry too much about the fact that people can see our card number because we know that fraud also requires access to our identity which is secured by the photo on our driver's license or passport.

As for cryptography overkill, it is already with us. Many web sites now offer secure links, my browser faithfully executes the difficult part in the background. All I see are cute icons telling me that I'm getting and sending coded messages that even a churning super-computer would take eons to break. Only problem is, I don't need that level of security on my mundane activities like reading a newspaper or ordering a plane ticket. What I do need, but can't really get is verification that the publisher and travel agent really are who they say they are. Such assurances are not yet possible since the "third party" companies that offer "certification" that a particular web site is what it claims to be are relative unknowns. Here again, a simpler solution would be to turn to existing public systems that could register and verify the basic claim to identity of a web site. Nothing fancy, just a verification of incorporation or of adherence to the commercial codes of good business.

Some people are waiting for biometrics (the use of fingerprints or retina scans) to clear up the whole identification mess. Well it could work for individuals if not for firms. But the real danger here is finding a trusted third party to vouch that the fingerprint is really yours. Believe it or not I prefer to have my embassy vouch for my citizenship. Not because governments have a perfect track record for efficiency or confidentiality, but because I consider my basic identity to be a democratic right that my government must grant regardless of my credit rating or if I've paid my bill to "trusted third party incorporated."

Indeed, a universal public system for establishing basic cyber-citizenship, similar to the common identification papers we use everyday in the physical world, could even help biometric companies take-off. After all it would be much easier for private firms to offer value-added privacy and identity services (like biometrics) because they could leverage - as they do in the physical world - basic government provided identification. A cyber-citizenship infrastructure would also help encourage the development of the Net's more radical possibilities like seamless worldwide medical databases and electronic democracy. Verifiable identity reduces considerably the fear of fictitious or irresponsible information being fed into such sensitive areas as disease diagnosis or voting.

Rules for Radicals

In most circumstances secure identity is even better and/or more important than secure transmission and where communication secrecy is absolutely necessary (e.g. financial transactions) governments could insist that identity signatures be attached. Governments need to be a little less hesitant in taking the initiative to provide a verifiable Net identity as a citizenship right. Privacy advocates need to admit that most transmissions do not need to be locked behind unassailable encryption and that when they are a reasonable civic trade-off is to signal who you are. In this way a little bit of compromise could resolve the crypto wars that are beginning to be a serious impediment to the evolution of the Net and electronic commerce.

Chapter 9: Beyond the Scams – Making the Cyber-boom Last

Paris - Internet scams, I read about them and smugly thought - not me. Until, that fateful e-mail arrived. It looked innocent enough. The originator's address was in plain view. I had registered at their site five or six months ago. So I was pleased that they were finally offering their services. The pitch was tempting. I could get in on a hot new IPO at the opening price. All I had to do was open an account.

So, after checking out the prospectus filed with the SEC, that is what I did. I filled out the form they provided. I gave them a lot of personal information. I kept on clicking through from one form to the next, until I reached the last page. At this final stop I was a politely thanked for signing up and baldly told that the IPO in question was already priced and sold. No action left. I had been played!

Okay, I did not lose anything but my privacy. This seems like the standard price to pay for lessons in how to survive in the hardball world of the cyber-frontier. Only I think that there are broader, more expensive implications for the world at large. What is at stake is how the current cyber-boom will play out. Will it end with a soft landing or the big bang of a speculative bubble bursting?

Foundations for the Cyber-boom

Internet stocks in the United States are at an all-time high. Most people admit that there is a degree of herd-like enthusiasm underpinning current valuations. At the same time there is a fairly convincing case to be made that the stock market has simply gotten ahead of the rest of the economy and society. Better and more widely available information is being combined with easy and inexpensive access by both investors and issuers to the stock exchange. As a result the stock market is more effective in anticipating and pushing forward far reaching transformations in the economic and social landscape. By betting on the future people are making it happen. And, in this case, the whole planet is trying to cash-in on the boom. So eventually, it is possible that the everyday world of production and consumption, productivity and profits will catch up with the stock market and provide a soft landing for today's ultra high-fliers.

Alternatively, the catch-up does not happen, or at least not fast enough. Then, like the amusing conceit of cartoon characters that only start to fall once they realize they have walked off the cliff, the market will crash. The pain inflicted by such a crash is likely to be wide and deep. Wide because of both the global inter-connectedness of markets and the pervasiveness of the Net's techno-organisational changes. Deep because the transformations taking place have unsettled old bulwarks without having so far put in place the new support systems. If the boom busts it could hit the most promising advances in economic, social and global development. Avoiding such an outcome would be well worth the effort.

The good news is that the euphoric levels of Internet stocks do contribute to capital investment, sectoral restructuring and global public awareness of the technological

Rules for Radicals

potential of the Net and the ensuing waves of innovation. Strong foundations are being built. Still expectations are higher, further out and moving faster.

Catching-up with the Cyber-Boom

What will it take to catch-up? For one thing, small players - from all over the world - need to be able to connect without hitting the kind of petty, confidence killing deception I ran into last week. It might seem like a minor gripe given the vast tides of money washing around the planet. And maybe, if the cyber-boom had not gone so high so fast, it would not matter that the broader institutional and regulatory infrastructure is taking so long to catch-up. Trouble is that without the tacit and explicit codes that encourage risk taking and participation in change the Net cannot meet the huge expectations.

Sooner rather than later the Net needs to deliver on the early promises of creating new, world spanning capital markets where small time investors and start-up companies can meet directly, easily and in confidence. Complacency with respect to introducing new infrastructure also plagues the area of Net payment systems. Credit cards have extended nicely into cyber-space, but the virtual collateral of one person Net vendors is not enough to gain merchant status. This means that millions of potential web suppliers can not afford to plug in to the proprietary payment systems that dominate e-commerce.

In the end catching up with the cyber-boom will take more than bets made by visionary speculators. It will take clear signs of progress towards introducing the infrastructure needed to achieve widespread and global participation by all kinds of producers and consumers, entrepreneurs and investors. Using brand names and deep pockets as a substitute for global rules and legal frameworks will not provide the kind of equal footing needed to turn the Net's potential into reality. Businesses and governments will have to come up with more than optimism and accommodating monetary policies. Even if everyone knows that a fully global infrastructure can not be built overnight, it would make a big difference if the problem were to be clearly recognized and commitments made to introducing the rules and institutions that will one day provide solid support for the Net's soaring hopes.

Chapter 10: From HELP Hell to Health Help

Paris - Error, error, error. No matter what I did, my word processing program wouldn't work. So what if I'd reinstalled my system software because it had become corrupted according to the all-knowing diagnostic programs. Why should my word processing program suddenly find the hard drive terra incognita? Now I'm no geek, but I've tinkered around computers since junior high school. Back then we used paper tape to send our programs via remote terminal to a distant mainframe and the Apollo missions were in full flight using a computer that couldn't hold a candle to my current desk-top. Except, of course, when it comes to "HELP". Then we're pre-Apollo since most computers come with minimalist manuals or help files written by Dr. Pangloss - who believes nothing really bad ever happens. Luckily, I thought with relief, today there's the Net. I decided to go surfing for a solution. Oh boy!

Waiting for Doctor Digital

So I logged on and started with the hardware manufacturer, on the off chance that other people with the same machine had reported a similar problem. No luck. Then I went over to the lofty world of system software. After answering fifty questions, including name, address, phone, breakfast cereal preferences and the riddle of the sphinx, I was granted access to the virtually vaulted halls of system support. But I quested in vain. All of my keyword searches came up empty. Lastly, I dove into the vast swamp of the application vendor's support library. With undying optimism I searched for my needle in the haystack. Nope, nothing, nada.

Delirious from my wandering in this labyrinthian pit I started hallucinating what the world might be like in a few years. In this rosy future my computer maintains a diagnostic file that continuously records its status. This on-going status report is constantly and securely assessed via the Net by my computer service bureau. And, my computer service bureau faithfully consults a database that records the symptoms, causes and solutions for everyone's computer problems worldwide. In this delirium induced image of heaven on earth even glitches, upgrades and prevention are dealt with automatically. Except for the occasional strategic choice regarding what I want to do with my computers (not what specific hardware or software to buy), I don't need to pay any attention to the technology. It serves me instead of vice versa.

Reluctantly waking from this fantasy, I abandoned hope, resigned to turning my wayward machine over to a dealer. Besides pouring myself a libation, I placated my frayed nerves by trying to convince myself that eventually the vaunted power of private sector competition will conjure up my computer utopia. While we wait we just have to ignore the cumulative economic and social costs of lost productivity and less efficient services.

Waiting for the Digital Doctor

Which brings me to the question of human rather than computer malfunctions. I consider this somewhat crude but nevertheless useful analogy to be the silver lining produced by

Rules for Radicals

the cloud of my computer induced nausea. Indeed, I find the parallel between computer care and health care helps to illuminate some striking similarities and one important difference.

Projecting current trends in medical technology into the medium-term future offers a plausible vision that comes quite close to the dream of a self-diagnosing, auto-maintenance computer. Two powerful technological trends seem to promise scientific feasibility. First, medical diagnostic tools are leaping forward across a full range of performance measures. New bio-sensors are more accurate, cheaper and capable of detecting the sources and/or symptoms of illness. Made from a dizzying range of hybrid materials, including so called DNA chips, much of this diagnostic information can be stored in digital form. Soon these medical tracking technologies will become inexpensive, dependable and portable enough to be personal. The walkman of the next century will be an individual medical recorder that lets you know when your blood sugar is getting too low and sends daily updates to the bio-history stored on your personal Intranet server.

The second key set of technological advances involve database collection and analysis. Here progress is being made not only in storing and comparing diverse data sources like x-rays and photos of facial features but also in finding patterns and posing questions based on massive amounts of information. Taking a single snapshot of some average, representative human genome is one thing, capturing hundreds of millions of individual genetic and medical profiles over time is another. Using this immense statistical universe and turning it into diagnostic, prevention and treatment information, that will be the real trick. Then formerly unidentifiable sources and patterns of illness and health will become transparent. Investments in medical research and innovation can be better targeted and evaluated. And, hopefully, medical costs can be cut while the effectiveness of treatment and prevention improve dramatically.

Not bad, my computer maintained by doctor digital and my body by the digital doctor. Only problem is that making the digital doctor happen will require more than just letting the market work its magic. This is the one big difference.

Don't get me wrong. Most elements of the digital doctor will emerge from the cut and thrust of market competition. The businesses of providing the communication backbones, "intelligent" medical software, real-time bio-tech diagnostic tools and even the data collection and analysis service bureaus are likely to tempt plenty of profit seeking investors - large and small. What is missing and won't be conjured up by market forces alone are the security-privacy, verifiability and inter-operability frameworks. Without this structure and the laws, rules and modest administration that go with it, there are good reasons for people to hesitate sharing or even collecting their medical data, for doctors to worry about the value and veracity of the databases, and for the companies that have products that might make such a system work to be very nervous about liability and piracy.

Think about the difference this way, when it comes to my computer I'm not too worried if some of the diagnostic data are corrupted by poor sampling or fraud. If someone taps

Rules for Radicals

into my computer's upgrade history, so what. If the statistical analyses of the causes of computer malfunction are kept secret so only one service bureau can solve certain problems, hey that's what competitive advantage is all about. But I can't say the same thing about human health care. Unreliable, inconsistent or incompatible bio-data kills the possibility of establishing the databases needed to make the leap in our understanding of disease and treatment. Stolen bio-histories could do terrible damage to individuals, revealing everything from their genetic weaknesses to bad eating habits. Keeping the causes of illness or cures secret for competitive advantage would simply be immoral.

Overcoming these problems is not difficult. Here's where we need rules in order to let radical things happen. Working together governments, research institutions and private companies need to establish the international laws, regulations and oversight bodies that could ensure: that people control their bio-data and keep it secret behind strong cryptography; that data formats and categories are consistent and comparable world-wide; that mechanisms to prevent tampering and allow verification are established; and that the wealth of knowledge that would come from mining this treasure would be shared while still providing incentives to make discoveries. Putting this type of framework in place would in fact accelerate the creation of the markets and enterprises that will accompany tomorrow's digital doctor.

Now if only I could think of some justification for helping to accelerate the emergence of doctor digital. Then maybe I (and millions like me) wouldn't be wasting so much valuable time cursing our malfunctioning computers.

Chapter 11: Searching for Tomorrow on the Cyberfrontier

Isolella, France - Finding a needle in a haystack is just a picturesque expression as long as your life does not depend on finding the needle. Then it becomes a curse.

Unfortunately that is where things are at on the Internet. The hype of boundlessly transparent commerce comes crashing up against the reality of search engines that only index around 30% of available pages

(<http://www.sciencemag.org/cgi/content/abstract/280/5360/98>) and, even with such limited content, can not effectively distinguish the sought after needles from the obstructing chaff.

Don't worry, be happy

True enough, you might say, but so what? There are three good reasons not to worry. First, a map that offers 100% coverage is no longer a map, it is the actual territory. The same goes for a book's index, if it encompasses everything in the book then it is no longer an index. Being able to search one third of the Net's pages is good enough. For superficial searches that target familiar, well publicized sites there is no problem. When it comes to more in-depth research, the existing search capacity is adequate for finding the threads that lead to the more obscure sources of information. Researcher's have always worked this way to home-in on a precise target. Why should the Internet be any different!

Second, why would anyone want to have access to all of the junk that is put up on the Net? After all, the Library of Congress holds most books that are published but it does not pretend to include all printed material. Not only would this demand excessive physical resources for collection and storage, but most of all what possible value is there in yesterday's flyer advertising a sale at the corner store? Such ephemeral and local printed material does not need to be archived for the historical record. Similarly most of the pages published on the Net have a very short shelf-life and are mostly of only local interest. There is little reason to index this material.

Finally, a third reason not to worry about the limited reach of today's search engines is that if we really need something better the market will respond. Competition is already very hot amongst the companies that provide search services, as are the stock market valuations. There is little reason to doubt that these enterprises will push search engine capacity, they will eagerly respond to consumer demand and they have the financial resources to help fund the research needed to spur technical advances. Solutions are on the way.

Pretty convincing, but as usual satisfaction depends a great deal on what you expect. If we are satisfied with simply reproducing what we already do in the physical world then there is no problem. Cyberspace is not really a frontier, it is just an extension of current practices into a faster, less expensive medium. Alternatively, with a little imagination it is possible to envision a different, more ambitious future.

Being More Ambitious

There are at least two good reasons for being more ambitious, and by implication not accepting the “what me worry” arguments. First and foremost it is crucial to understand how radically different a cyber economy could be, then the need for 100% mapping emerges quite clearly. Second, having identified the goal of indexing most of the information posted to the net - including those areas that lie outside the commercially profitable realm - it becomes evident that more rapid progress towards this goal will both lower the costs of making the transition to a new economy and increase the payoff.

Ok, so what exactly is this new economy that merits setting our sights on a full mapping of the Net’s content?

At its most extreme it will mean the end of the distinction between demand and supply, consumer and producer. Perhaps that sounds banal, it isn’t. To find a roughly similar leap in the way the economy and society are organized I think we have to go back to Adam Smith who managed to envision a world where consumers and producers were divided, yet guided by the invisible hand. At the time Smith wrote (in the middle to late 1700s) the overwhelming majority of people provided their own food, clothing, housing, education and transportation - if you wanted something you produced it yourself. Still he saw the possibility, traced by the development of industry, of an economy where each person pursued only a particular specialty, like growing food, processing food, building housing, supplying education and selling transportation, without provoking chaos. The incentives and signals of the market took care of the co-ordination. He also projected this more highly specialized division of labor into the production process - in fact the two movements went hand in hand.

As we now know, this dual process unleashed an unprecedented increase in the rate of growth of productivity - and the wealth of nations. How and why should this centuries old trajectory change course?

First and foremost it is because of a twofold change in the economy. On one side is the gradual shift from an economy where tangible resources and products (and the physical labor that goes into them) represented the vast share of wealth creation, to an economy where intangible ideas and knowledge constitute the largest share of output and the value-added by labor. On the other side is the movement away from the old logic of specialization where privileged, highly technical knowledge provided the economic advantages of the division of labor within the production process and between consumers and producers. Instead we are moving towards individualization or the customization of all goods and services - the consumer is once again becoming the producer. The valuable value-added, the conceptual labor that makes the product unique and designed to your tastes, comes from you. Creativity is the wellspring.

Still there is the question of why bother? Why go to all of this trouble? Would it not be easier and more fun to remain a couch potato? Here the most persuasive answer is that there is not likely to be much choice. In a competitive economy the search for higher productivity and ways to find a profitable niche will eventually reach the person best able

Rules for Radicals

to customize to their own taste - you. For the most part I think this is good news since it provides a neat solution to unemployment, because in order to meet our own needs we will all end up employing ourselves a fair bit of the time. Furthermore, the reintegration of production and consumption offers a solution to the nagging problem that productivity growth in manufacturing seems to always outstrip that of services. In the future, there is a good chance that greater efficiency will be a natural outcome of gaining the knowledge and experience to meet one's needs over a lifetime. Think of it as becoming more expert at being ourselves.

Better Search Engines

Well that is the ambition. Not one that will be achieved overnight. Many pieces will have to fall into place for such a transition to happen (some of which have been mentioned in my previous ICC articles ([hyper-link](#)), with more to come in the future). One of the minimum requirements is a way of searching close to 100% of the Net quickly and accurately. This time around we are beyond Smith's problem of how to better organize the physical effort required to furnish the full range of life's enjoyments. Now the question is how to efficiently and inexpensively gain access to the necessary information, inspiration and collaboration that will allow everyone to become their own supplier. A business as usual Net with partial indexing and almost blind sifting capacity does not meet the challenge nor the promise.

Mapping cyberspace, like other frontiers before it, will demand public and private sector initiative. Nor is technology alone likely to do the trick, particularly given the level of detail and retrieveability required. Making the Net fully and easily navigable will likely depend a great deal on culture and habit, custom and law, most of which have yet to be invented.

Chapter 12: Moral Hazards and Self-Regulation

Paris - Moral hazards are not a new chewable candy. A moral hazard occurs when, for instance, someone buys fire insurance for their home and then becomes less careful about extinguishing burning cigarettes, candles and logs in the hearth. After all they say, I'm insured. Of course there are countervailing disincentives such as the danger of burning down with the house or in the case of arson, criminal prosecution. Without a workable balance between incentives and disincentives it would probably be impossible to offer fire or almost any other kind of insurance without unleashing a riot of either negligent or self-interested catastrophe.

Out on the cyberspace frontier the search for that balance is just beginning. Controversy swirls around how to handle a series of tricky issues, particularly protecting children and privacy on the Net. No one disagrees about the need or the goals, but there are serious schisms about how to reach the target.

A Slippery Slope

On one side of the debate are a range of hardware vendors, content rating services (companies that sell software to screen out undesirable web sites like pornography), content producers and Internet service providers (ISPs). Generally, they think that self-regulation without legislation or public oversight will be sufficient to ensure that privacy is respected, that web site screening meets the needs of all parents and that ISPs will act responsibly when they find illegal content on their system. Maybe.

Self-regulation does have many virtues. First of all it can be somewhat easier to enforce since, after all, it is self-imposed. Secondly it follows the user-pay principle since the cost of developing the technological and organizational solutions are paid initially by the companies and ultimately by the users or customers, but not necessarily by the average taxpayer who might not even use the Net. Third, self-regulation holds the promise of a more flexible and adapted system that deals with the many permutations and variations that are likely to arise in cyberspace. Lastly, there is a strong chance that taking the path of self-regulation will lead to a rapidly growing and fairly profitable market for services like privacy protection and web screening.

Self-regulation is efficient, fair, flexible and good for the economy, where's the hitch? There are two. Self-regulation without an underlying legal framework can suffer from a lower level of compliance due to its usually less than universal application and enforcement, not to mention generally weaker penalties than those that can be handed down by a court of law. This, in turn, gives rise to a second problem: moral hazard. Simply put, some companies that support self-regulation do so, in part, because it is less universal and less stringent. A leaky and lenient regulatory regime leaves open many opportunities for providing alternative means of protection. That alternative is often their bread and butter.

Rules for Radicals

Perhaps this point can best be illustrated by drawing a parallel to the material rather than virtual world. Consider the case of a city where law enforcement is very unevenly distributed. In some parts of town people will feel safe, in others they will be scared. Moral hazard creeps into the picture if you're in the business of supplying bodyguard services or security technology, or if you happen to own property in the desirably safe parts of town. Sure few people support crime, least of all those living in the midst of it, but without a little danger it is harder to sell protection services or insist that your property is worth more because it is in a relatively safer neighborhood.

Cyberspace isn't any different. Three groups, with slightly different interests, run the risk of sliding down the slippery slope of moral hazard. Content providers, particularly those with well established brand names, are sorely tempted to favor less than universal protection because that means people will turn to their familiar and safe sites rather than run the risk of ending up in a "danger zone". Hardware and software suppliers can't help but be attracted by the prospect of millions of consumers looking for technological solutions to the various dangers of surfing the Net. Lastly, there are worries on the telecom side with its independent ISPs, telephone and cable companies, that tough laws regarding privacy protection and content screening will leave them open to greater liability costs.

Self-regulation could be compromised by these conflicts of interest.

Beyond Moral Hazard

Advocates of a law based approach to ensuring safety in cyberspace come in many stripes. Most of them share the view that governments should clamp down hard on the violators of "common decency," even if what they are doing isn't strictly illegal. From this perspective, strong legislative solutions to problems of privacy and harmful content have the advantage of being more universal and probably much more dissuasive than a purely self-regulatory option. Clear prohibitions combined with the enforcement power of the police and courts would likely shut-down many offensive sites and significantly reduce the occurrence of privacy violations.

One practical damper to this approach is that the US Supreme Court has already ruled against draconian policing of the Net when it threw out the Communications Decency Act last year. Another counter argument, wielded effectively by many Net users and companies, is that such heavy handed and punitive methods threaten to suffocate not only free expression and learning but also the development of Net related businesses. Faced with the full cost of protecting users and/or major liabilities should safeguards fail, many investors might give up on the prospect of turning a profit from the Net. In the end this cure might be worse than the disease.

A compromise between the two hard-line positions looks like a better bet.

One solution, which might not satisfy either of the extremes in this debate, is to set up a legal framework that makes standards for privacy and screening universal and

Rules for Radicals

compulsory but allows the various interested parties (“stake-holders”) to use the self-regulation model for implementation. The advantages of a mixed model are many.

A strong legal framework would address the need for universality, adequately dissuasive penalties, effective enforcement and an impartial judicial system. Everyone on the Net would know what the rules are when it comes to privacy protection and ensuring that sites are rated so that they can be screened by users according to their preferences. No one supplier with a vaunted brand name or a huge share of the market would be able to profit from people’s fears since everyone would, by law, have access to protection.

On the operational side, supervision and approval of the many methods and technologies capable of meeting the privacy and content labeling standards could be left up to non-profit organizations that include a cross-section of the pertinent companies, citizens and government representatives. Although such a multi-player institution might take a bit more time to find a consensus, there would be less chance of sliding back into the swamp of moral hazards or of the regulations being captured by the regulated. The range of interests at the table should help to maintain transparency and could even provide an important feedback loop that helps spur innovation. Finally, this mixture could form a solid foundation for scaling up a solution to the challenge of fostering Net freedom and safety on a global scale.

Cyberspace holds out the promise of a borderless world where everyone can safely explore humanity’s vast store of knowledge. A radical possibility that will not become reality without universal and effective rules.

Chapter 13: Minting Money on the Cyberfrontier

Paris, France - Last week I ran out of cash at a Cafe and had to dash down the street to an ATM to replenish my stock of paper money. No matter that I have at least six different types of credit, debit, pre-paid and special purpose cards in my wallet. Paying for a cup of coffee still requires cold, or in this case warm, cash.

On the Internet it is exactly the opposite. Marvelously, books, computer equipment, flowers, antiques, software, newspapers, magazines and more are all now available for sale from Net based vendors. Only access to this cornucopia of consumer choice and convenience requires two things: a computer that connects to the Internet and a credit card. Cash, meaning an electronic version of government issued legal tender, does not even exist on the Net.

Lack of official e-cash on the Net is a big problem.

The virtues of a national currency

Around one hundred and twenty years ago in the US there were plenty of private issuers of cash. There was also a problem that provoked considerable attention by the Secret Service at its inception. Around 30% of the money in circulation was counterfeit.

The first virtue of establishing an old fashioned physical national currency is that it becomes easier to ensure (not guarantee) the integrity of the money in circulation. Governments have both the legitimacy that comes from representing the general interest and sufficient resources to effectively police and supervise the technical quality of a single issuer material money supply.

Second, a universally available legal tender lets people say that their money is just as good as the next person's. Equal access to a high quality means of payment is an important foundation for both social justice and economic efficiency.

The third advantage of cash is that it tells no tales. Anonymity and the privacy that goes with it are fairly easy to maintain with regular money.

Lastly, a national legal tender contributes to monetary transparency in ways that make it easier (but far from foolproof) to manage the money supply and encourage a wide range of payment methods, from charge cards to travelers checks.

Will that be charge card or charge card?

For the time-being cyberspace lacks this government backed means of payment. As a result most readily available ways of making a purchase on the Net remain insecure, lack privacy and fail to treat equally everyone that is able to pay. Even though so called "Internet time" is supposed to accelerate innovation and change, little has happened over the last few years.

Rules for Radicals

When it comes to security, current cyber-payment systems are mostly wide open for abuse and fraud (even if the transmission is encrypted). Privacy is non-existent given that there is almost no choice except to use a charge card. Which in turn excludes someone that might have earned their cash fair and square from a hard days work but still does not have a bank card.

Without legal tender in cyberspace there is no level playing field for entrepreneurs looking to establish virtual payment networks. Lacking one of the cornerstones of its own infrastructure the Cyberfrontier has to lean on the existing constellation of well established players with deep pockets and a hammer-lock on both consumers and merchants. Still, even with these advantages, the financial companies and wannabe e-cash heavyweights (like phone companies) are having a hard time extending payment systems from the physical to the virtual.

E-cash hopefuls

Venturesome entrepreneurs, banks and technology companies are trying hard to become tomorrow's suppliers of e-cash. Only they have not been able to make too much progress.

For a few years now a variety of firms have been testing, introducing and even advertising stored cash mechanisms. These can take the form of so-called "smart cards" issued by a bank or phone company or transit authority and that contain a memory chip able to record a credit balance transferred into it. Or there are software equivalents that create a kind of virtual strong-box on a network that is then made accessible to consumers and merchants for their transactions.

There is nothing wrong with these additional payment vehicles. Telephone or bus or financial companies that get hard cash and give out chip cards that can be used for phone calls, bus rides or a cup of coffee are generally glad to profit from the float (the money they have use of while the phone card sits in your pocket, or even better gets lost). If this type of suspended animation cash storage really catches on a few problems may emerge related to unsupervised credit creation and unrecorded transactions. But these are minor issues that modest regulatory reform can easily address.

What really matters is that these e-cash hopefuls depend on having legal tender transferred over to the issuer of the "electronic wallet." To use the Net jargon, the intermediary is not disintermediated - just the opposite. This form of e-cash is an additional layer that is more costly to the consumer than writing checks and less convenient than using a credit card. Right now the only fan of stored value payment mechanisms are banks that see lower per transaction costs and brand name promoters hoping to bring consumers into orbit around specific products.

Is it any wonder that most Net shopping is done using a credit card?

Government minted cyber-money

Government issued virtual money (a string of encrypted numbers that assure authenticity and non-duplication) would open up whole new horizons on the Cyberfrontier. No more hesitations or worry about lost privacy, wandering credit card numbers or refusal of your payment instrument. The ease and management of electronic commerce would improve across the board, from speed of final payment to ease of recording an audit trail.

Going into business on the Net would suddenly be transformed from a tricky and uncertain search for how to get paid into a direct test of the product's market. Startup costs plummet along with transaction costs.

Still, many things would stay the same. Banks could remain safe havens, places where the zeros and ones of digital legal tender would be backed up regularly, insured against loss and available around the clock. Today's value-added repackagers of regular money, like debit card and traveler check suppliers, could offer new and fancy ways of bundling cyber-money. Biometrics, the identification on the basis of biological features like a finger-print, might even have an added incentive to develop as people will yearn for the convenience of transferring cyber-money directly over the Net from their virtual vault by using a thumb print to settle a restaurant bill or transit fare.

Intrepid individuals or firms might try to by-pass banks and existing financial networks entirely by using their own, soundly encrypted computer server as a cyber-money vault. They may even offer their services, spawning a boom of mini-banks just as the financial world seems to be consolidating in ever more gargantuan mergers.

Stagecoach robbers and techno-stagnation

Not everything will come up roses. Just like in the 1860s, when the introduction of a national currency and the Secret Service combined to drive down the share of counterfeit money in circulation, stagecoach robbers are happy to see more legal tender in the day's take. Today's money launderers, tax evaders, drug lords and white collar cheats will also be glad to have an almost invisible, liquid means of payment to shuttle around the globe.

But even if controlling crime will be a bit more difficult, there can be little doubt that the gains from the expansion of general commerce are likely to outweigh the costs of bringing on stream new accounting regulations and additional police resources. Over a century ago there was a willingness to take on the challenge of bogus currency, now there is a similar chance to grease the transaction wheels of economic growth.

Another concern is that a government monopoly on issuing cyber-money will stifle technical progress in the areas of cryptography, digital authentication and verification, and network communication protocols in general. But government's role as issuer of physical money did not squash innovation in printing technology or the refining of ore for coins. Once again, all governments need to do is offer a minting right to any protocol that meets the required security standards. This approach is likely to spur technological progress amongst potential cyber-money mints and networks.

Rules for Radicals

Overcoming bandits and technological hurdles was part of settling the Wild West. Introducing a few rules and a solid sovereign cyber-money is part of turning the Cyberfrontier into a thriving virtual world.

Chapter 14: Fences on the Cyberfrontier: Certification, Taxes and Standards

Paris, France - My latest foray into the world of electronic commerce started off splendidly. Initially I surfed around to find the specifications for the modem I needed. Then I did a little comparison shopping, found the vendor with the best price and promptly sent my order speeding on its way. Web shopping at its finest.

Only the joy did not last long because the very next day I hit the first of a series of progressively higher fences carving up cyberspace. First I got hassled by the vendor for in-depth identification, they wanted to certify my ability to pay beyond the basics of my credit card number. In my view this was an excessive invasion of my privacy. After all, I did not know much about them. Why did they have to know more about me?

The next, even more irksome hurdle, was when the package disappeared into the labyrinth of international delivery. Eventually, many days and phone calls later, I tracked it down in French customs. The package had been sitting there for almost a week, waiting for me to pay the 20% sales tax (VAT). Although I was a bit surprised since my previous shipments had not suffered this fate, I agreed to pay. I was told delivery was imminent.

I waited and waited, no parcel. Again, a few days and phone calls later, I discovered that I needed a certificate showing that the modem met the standards of the French Ministry of Post and Telecommunications. An insurmountable fence along the sweeping plains of the cyberfrontier.

I gave up and my modem went wandering back to California.

Taking down the fences

All three of these fences need to be taken down if electronic commerce and cyberspace are to reach full potential.

Getting rid of the first fence will hopefully be the easiest. I appreciate that the vendor wants to be sure I can pay for my order. I have a similar desire to make sure I'm not dealing with a fly-by-night operation that just collects credit card numbers.

Dismantling this fence will require the development of trustworthy registration and certification systems that can verify both my ability to pay and the good standing of a business. This does not necessarily mean revealing my personal identity since with sophisticated certification methods in place I would be able to provide verification of my credit worthiness without divulging anything else. Indeed, it is worth noting that it will only become possible to control individual privacy and even corporate confidentiality by using the power of information technology to introduce a range of distinct, registered identities (like residential, work, medical, entertainment, financial and corporate) and

Rules for Radicals

secure ways of certifying the authenticity of the specific identity necessary for completing the desired transaction.

For instance, if I wanted to remain completely anonymous I would use cyber-money {url to last months article <http://www.intellectualcapital.com/issues/98/0702/icbusiness2.asp>}. But for cyber-money to work it needs to be registered with a trustworthy credit agency or bank and that registration needs to be available for secure authentication. Turning to the other side of the transaction, a business can only confirm its identity and good standing amongst consumers if it is registered somewhere that is easy for me to authenticate and trust.

In theory the second barrier that obstructs the seamless expanse of cyberspace should also be easy to eliminate. Paying sales taxes or even VAT, be it on tangible goods or quasi-tangible digital products (like downloaded software, movies, etc.), could be handled by the same registration and certification systems that reduce barriers to everyday transactions. In this case the type of identification required would have to include the appropriate location for tax purposes (which might vary according to jurisdiction). Once this identity was certified, the sales tax could be simply tacked on.

Here information technology makes it easy to proxy the physical world where there is no problem figuring out which sales tax applies to a face to face transaction. Cyber payment of sales taxes could even reduce the costs to business by directly routing the appropriate amount to the appropriate public treasury.

For those who object to paying sales taxes at all, I suggest they take up the issue with their local politicians. And, to those who complain that it will be too complicated (costly) to figure out which sales tax applies to whom, I ask what are computers for if not handling large databases that can easily correlate the region (not exact place) where I live with the applicable taxes?

Which brings us to that final, up until now insurmountable fence - incompatible standards. Across borders and even between neighbors there are many differences and potential conflicts that arise because of variations in regulations such as health and safety regulations intended to protect consumers or the moral and legal codes associated with the beliefs and history of a particular community.

No speedy certification of financial standing nor fancy database can surmount or resolve these differences. But information technology can help us to respect such differences by making them more transparent. Then, if there is the popular interest and political will, it may be possible to amend or harmonize certain standards in order to ease flows across the entire cyberfrontier.

Indeed, transparency could help create the desire to eliminate certain unnecessarily conflicting standards, like the unduly protectionist one that blocked me from bringing a modem into France. At a minimum, a cyberspace registry of transaction related community standards could help to avoid the wasted time, effort and money spent sending hapless packages on round trips across the Atlantic.

Is the cure worse than the disease?

Of course all of this back and forth, checking and cross-checking sounds elaborate and time-consuming. Even worse Internet based registration and certification systems might help “big brother” to invade people’s privacy and abrogate their civil rights. Could the cure end up being worse than the disease?

I think not, for three main reasons.

First of all because the danger of having one’s privacy invaded by malevolent public or private organizations is out there anyhow. Furthermore, the current system exacerbates the problem by forcing people to pay a high price, both in terms of lost privacy and a large exposure to risk, if they want to jump the many cyberspace fences. Lacking the basic identity registry on which to anchor an anonymous offer -- one that attests to credit worthiness without divulging personal details -- leaves little choice but to provide telling individual information that can be easily checked and tracked. In fact, the only way to really offer protection from “big brother’s” snooping on the Net would be to develop a complete, cryptographically sound registration and certification infrastructure.

Second, the current system is already too convoluted and costly. Mechanisms for easily verifying the pertinent identify of buyers and sellers, the appropriate sales taxes and degree of standards compatibility could significantly reduce the cost of e-commerce transactions. These efficiency gains would come not only from simplifying transaction complexity for the user but also by helping consumers, businesses and politicians to recognize more clearly the many barriers. Finally, it might also be a step along the road towards robust and efficient micro-payment schemes that could, in turn, help encourage such developments as pay-per-use copyright systems.

Third, and perhaps most controversially, cyberspace could give rise to outlaw zones where property, human and social rights are ignored. A sophisticated identity registration and certification infrastructure would, paradoxically, help to cut the height of the fences being built in cyberspace by reducing the risk that bandits might come calling. Rogue drug suppliers, fraudulent banks and brazen tax evaders would all have fewer places to hide and most law abiding citizens would need less protection (face fewer risks) when venturing out into cyberspace.

Fence busters - who ya gonna call?

At the moment the physical world is imposing its inhibitions and compartmentalizations onto the virtual world of cyberspace. At the outset this is understandable. But as time goes on these fences and old habits could become a serious threat.

For the adventurous entrepreneurs and early-adopters attempting to settle the frontier delays in introducing robust and universal systems for registration and certification risk destroying the much sought after profits and efficiency gains. More broadly and ultimately more detrimental to future well-being is the risk that insufficient progress

Rules for Radicals

towards the required infrastructure will lock cyberspace into a fragmented and inefficient configuration.

The problems are not technological. Today's computers, networks, database and cryptographic software are all capable of handling the challenge. Even the rapid pace of change in the specific chips, protocols and programming languages are beside the point (regardless of the technological changes under the hood of your car, turning the key or punching a code still starts the engine). What is lacking is the will to push forward the organizational and legal frameworks that would underpin a seamless cyberspace. Vested interests and traditions are propping up many of the fences.

Progress will probably require unconventional responses from both the private and public sectors. A willingness - on a global scale - to experiment, make mistakes, find compromises and co-operate will be essential. One such opportunity will be in Ottawa this October at the OECD Ministerial Conference entitled: A Borderless World: Realising the Potential of Global Electronic Commerce {insert url: <http://www.oecd.org//dsti/sti/it/ec/news/ottawa.htm>}.}

Chapter 15: Homesteading is not a game on the Cyberfrontier

Paris - What a thrill! To become a senator in Ancient Rome or stride the by-ways of a medieval fair as an artisan selling my wares. Such are the tales spun in real-time when I join any one of the Net's many virtual reality games. Only it all turns hum-drum pretty fast. Outside, on the street below, is reality and I have to say it is vastly richer than the simulated lands of myth and legend offered on the Net.

Maybe I'm just not the right demographic but I get bored with the wooden, one-line and net-lagged "conversations" that make rather feeble attempts to "dress-up" in Roman Centurion or Court Jester speak. Commerce, work and a walk in the virtual park are similar to the real thing except you can't smell the roses and the on-line thugs tend to be even nastier than on the local bus. Virtual life ends up being time consuming, repetitive and uneventful until the cataclysmic moment when a marauding knight chops your head off.

Okay, it is funny sometimes. But I expected much more. Perhaps not from the virtual reality games that are just out to turn a profit by entertaining as many people as they can. It was the Net as a whole that had inspired higher hopes.

Now, after more than two years of working, playing, shopping, communicating and exploring the Net almost every day I have to admit that I have not run across a community that asks for, much less merits, my allegiance. With the exception of a few bulletin boards or chat lines that appeal to limited, highly specific interests, the call of the cyberfrontier has failed to reach beyond superficial communities of amusement, information and commerce. Like the real world counterparts, these networks for fun, work and shopping do not foster a sense of belonging anymore than a visit to the local theme park, library, magazine stand or retail outlet.

It could be, as the skeptics like to say, that the Net is nothing more than a marginal improvement over the telephone. Like the horseless carriage was just an iterative advance over the buggy. True enough, making the most of a new technology is not a forgone conclusion. It is possible that cyberspace will never be settled, remaining simply a better, faster cross-roads for telecommunications.

To get beyond this plateau we need to recognize, first, the forces pushing the Net to be more than a mere conduit for existing socio-economic relations, and second, that the shift to this next stage will not happen spontaneously without explicit collective action (in many cases by governments).

Why the Net might still give rise to community

Writing off the possibility that the Net can contribute to the creation of new social bonds in the digital age is wrong for four reasons.

Rules for Radicals

First and most obvious, any technology with as many potential applications - both familiar and yet to be invented - will certainly have powerful implications for the way society is organized and people interact. Inventions like electricity and the automobile facilitated and drove-forward changes in how we live, work and relate to each other. The Internet is no different, it is a pervasive technology that opens up the possibility of transforming the world around us.

A second factor that lends support to the view that the Net could become more than just another pipe layered on top of existing networks is the emergence of the knowledge economy. Already creativity is becoming one of the primary sources of wealth creation. The dominance of tangible assets is giving way gradually to the sway of intangibles. Sustaining this economy based on the sharing of ideas and inspiration will, in all likelihood, push the Net into a central role as facilitator.

Third the web of new networks that make up cyberspace are likely to be called upon as old relationships to work and community continue to fragment and dissolve. With the shift away from the familiar patterns of industry and trade old cultural bastions and ideologies are crumbling. The hollowing out of national, religious and other collective identities drive people to seek new forms and avenues for self-realization. One of the means for undertaking such a quest could be the Net.

Lastly, more positively, the call of the cyberfrontier may yet entice people with a strong enough will and sufficient inspiration to build communities capable of sparking strong loyalties and fostering a broad sense of identity. In other words, the pioneers might be the ones to prove that the Net can provide a foundation for tomorrow's tribes.

So far though, there seems to be little progress on any of these fronts. In part this is because some fundamental initiatives have not yet been taken.

Turning the possible into the real

In particular the lack of effective means for easily establishing a reliable identity undermines any prospect of settling the cyberfrontier. Indeed it is pretty obvious that if no one knows who you are then you have nothing at stake. Anonymity, along with its flip side - a lack of privacy, render personal investment at once pointless and too risky.

The same is true of other frontiers, like the historical Old West or the cutting edge of science, few would be foolish enough to invest their lives or time if they could not stake a claim. Lacking individual commitment communities will not develop. And, without ways of assuring the basic human right to identity and privacy in cyberspace none of the four reasons cited above will be enough to ensure that the Net reaches its potential.

Tomorrow's homesteader on the cyberfrontier must be able to count on a universally recognized, legitimate identity. From this foundation can spring the rights and responsibilities upon which commitment and community can be built. Then cyberspace might not be such a lonely place.

Chapter 16: Cyber-Citizenship

Serraval, Haute-Savoie, France. Imagine my shock when one perfectly normal morning I woke up to discover that I'd suffered a terrible metamorphosis. Overnight my internet news service had changed my identity. On my custom news page all of the carefully selected interests and winning stock portfolio had been replaced by someone else's favorite things and a bunch of Wall Street losers. For me this was more than a Kafkaesque loss of identity, not to mention invasion of another person's privacy. It demonstrated, once again, that cyberspace lacks the basic infrastructure that turns a frontier into a thriving community.

At the moment, easily verifiable and inviolate identity are almost unattainable in cyberspace. This will have to change. A secure and clear identity is pivotal for the development of both electronic commerce and tomorrow's virtual communities.

Economic Identity

When I walk into a store, pick up a magazine, go to the cash, put my money on the counter and leave, I've engaged in a quasi-anonymous transaction. The cashier has seen me and might be able to recognize me, but unless I've paid by credit card or check they don't know much more about me. This is fairly efficient. The cash has credibility and I'm physically present to assert my existence. There is no need for further information about me or the vendor.

Electronic commerce, as everyone knows, promises to be even more efficient since I don't have to go to the corner store to get my magazine. And, anonymity on the Net, as all canine internavts know, can be almost complete. Information costs are kept to a minimum. So far so good.

But, what happens when I don't want to be anonymous or even more importantly when a lack of verifiable identity undermines credibility and liability? This is where the information costs of the Net become, for the time being, more costly than in the material world.

Consider a few everyday ways of using the Net, for instance, to make a deposit in an internet bank or to purchase a subscription to an internet magazine or return a faulty blender purchased via the Net or submit a report back to the home office. Does it matter that a bank has little capacity to verify that you actually are who you claim to be? Does it matter that you have little way of knowing if the bank or magazine really exist beyond a scam on a machine? Is it an obstacle to buying something via the Net if you don't know who to go back to if the product is faulty or what laws or jurisdiction apply to the virtual store? Will you think twice before submitting a crucial document via the Net when you know how easy it is for someone to impersonate you?

I think the answer to all of these questions is in the affirmative. In the virtual world of cyberspace companies and people still need a verifiable identity. Banks don't want to

Rules for Radicals

deal with impostors and I don't want to deposit my money or get my news from a front operation that pretends to be an established company. I care about the claims made by the manufacturer of the blender I'm thinking of buying and I want clear and enforceable laws governing warranty, liability and false advertising. I also need to be sure that when I e-mail the boss or my Mom they can be sure it is really me sending the message.

Cryptography is a necessary but not sufficient solution. Encrypted communication and personal keys are necessary for ensuring that once identity has been established that it is not then violated. But this still begs the question of universal access to easily verifiable identity.

Similarly, the introduction of a global commercial code, as recently proposed by the Clinton administration in its Framework for Global Electronic Commerce (<http://www.iitf.nist.gov/elecomm/ecom.html>) is a necessary but not sufficient condition. Such a code would significantly reduce the arbitrary and dysfunctional risks that now plague commerce on the Net. It would help to reduce the likelihood of fraud, introduce effective mechanisms for ensuring liability and help to create the kind of uniform global rules that are crucial if the creativity and competition of the market are to reach full potential in cyberspace.

Still, a global commercial code will not function without effective methods for reliably identifying who is who - be it a firm or an individual. What's the point of having a mutually agreed contract based on a common commercial code when it is almost impossible or very costly to fully verify who you are signing the contract with?

The clerk at the corner store had it easy, verifying my existence was just a question of opening their eyes. For electronic commerce to really flourish, cyberspace will need an equally inexpensive and dependable method for confirming the economic identity of a business or a person.

Community Identity

When I walk into a polling station to cast my vote, or speak up on a controversial issue at home, or witness a car accident, or simply strike up a conversation in a cafe, my physical presence goes a long way towards establishing my identity. Certain documents are also helpful in everyday life, like proof of citizenship for voting or a driver's license for using my car. We take it for granted, but it is out of these rough building blocks that we currently build communities with distinct histories and senses of identity, rooted in specific locations.

Cyberspace is flimsy in comparison. Its lack of solidity, so often its great strength, becomes a weakness when it comes to two of the basic ingredients of a community - rights and responsibilities. Communities can't exist for long without rights and responsibilities. A world where impostors are costly to detect, complete anonymity is the rule not the exception and access to reliable identity is reserved for a small minority of society, cannot aspire to become a vigorous and diversified community. How can rights be claimed by an unknown? Why should I expect responsible behavior from someone

Rules for Radicals

with close to perfect anonymity? Will cyberspace foster the multitude and variety of communities it is capable of without universal access to an easily verifiable identity for whomever goes there?

Here I think the answers are in the negative. Rights, responsibility and a diversity of communities will require universal access to reliable identity in cyberspace. Even the free-wheeling virtual communities that are pioneering use of the Net have adopted rules about identity and in certain cases have punished rule breakers with banishment, a revocation of their "user name" pseudonym. But such easy denial of "citizenship" only proves that what comes cheap - an unverifiable identity - is cheap. If people are to homestead the cyber frontier and build communities we need to figure out how to extend the citizenship of the physical world into its virtual counterpart.

Establishing Identity in Cyberspace

Commercial cryptography and identity verification firms expect to do a booming business. As electronic commerce and virtual communities expand these companies hope to sell services and software capable of overcoming the difficulty of establishing identity in cyberspace. This is certainly a market waiting to happen. However, both for businesses and individuals I think these firms can only be expected to offer a second level of more in-depth and tailored personal or corporate information. I don't think that a patch-work of competing ways of establishing if a company or a person are really who they claim will be efficient or equitable enough. Firms and people need a basic, universally accessible and easily verifiable initial identity. Such a solution must be entrenched in law and applicable to all. Then, on top of this basic layer, many permutations and competing private providers can flourish.

Which solutions for providing universal and easily verifiable identity in cyberspace look most promising?

Business Identity — Firms have domain names. For the most part the recent debate has concentrated on the problems facing private businesses that have well established trademarks or marketing plans that conflict with already claimed domain names. Here there is an effective parallel to the material world. Indeed the term "domain", as in territory, makes the comparison with a land registry fairly obvious. A centralized land registry helps make sure that competition for real estate is possible by establishing clear records of ownership and helping to reduce the number and cost of disputes regarding the dimensions of the land in question. As a result there is a better chance of fostering competitive property markets.

Centralization is no longer a question of establishing a single location for a registry since databases can be compared (assuming compatibility), but the principle remains the same. A complete and comprehensive registry that provides clear demarcation and ownership is the cornerstone for competition over land or domain names. Providing registry services and administration can be open to competition as long as everyone has access to the central database. Competition amongst registration service providers, although useful from the point of view of consumers, isn't as important as the establishment of

Rules for Radicals

functioning property market. Cyberspace needs a system that ensures that domain names are clear, inviolate, easily verifiable and capable of being owned.

Once the domain name system is running smoothly only modest legal changes are likely to be needed to solve the basic identity problem for businesses. For instance, requiring firms that want to do business in cyberspace to provide basic information concerning identity - such as location of incorporation and the applicable legal framework for conducting business. These laws, combined with powerful cryptography and a working Net based system for registering and checking on domain names, should deal with most of the identity problems of businesses and other organizations.

Individual Identity — People, however, are not property. Legally mandated domain name identification and a commercial code won't do the trick. Fundamental human rights like identity should not depend on having sufficient financial assets nor should failure to pay an annual subscription fee lead to the cancellation of a person's identity. Cyber-citizenship needs to be universal, free and protected by a strong legal framework that helps to dissuade tampering, falsification and unauthorized access. At the outset a cyber-citizenship "account" (perhaps stored by a national "certification authority") would contain only the information needed to establish your unique identity and national citizenship. Subsequently, you could add and modify information at your discretion. Except for the basic data and personally unique name that is set when the account is initiated the information belongs to you, not the government.

In this way everyone would have access to an identity in cyberspace, one that would serve as the anchor for privacy and as an inexpensive way of verifying that the name you are using is unique (based on a "public" key) and really exists. The risk of impersonation is still there of course. Stolen names ("private" password keys) and logged-in computers left open for others to use would allow someone to pretend they are you. But it would be harder to undertake such impersonation and even more importantly it would be much easier to verify the existence of other voters, debaters and friends while in cyberspace. Technology, as it evolves, will also help. The diffusion of cheap internet video and such devices as fingerprint or retina scanners will make asserting our identity in cyberspace easier and easier. Eventually it will become almost as simple and inexpensive as in the physical world.

Such developments should also help to encourage a market in privacy or more accurately in giving up your privacy. Selling information about your likes and dislikes, assets and income to the highest bidder is fine. But, once again, the market won't develop very quickly if the collectors and buyers of such information can't be sure that the individuals in the sample really exist. A collection of fictitious consumers with wild buying habits dreamt up as fraternity house lark are unlikely to offer much useful information. Even the market for privacy requires simple and universal methods for establishing cyber-citizenship. As does the market for secure (encrypted) communication that would flourish more rapidly if it could build on a solid foundation of easily and reliably verifiable identity.

Cyber-citizenship

Indeed, without cyber-citizenship and the right to a secure identity there can be no privacy. Without cyber-citizenship and the responsibilities that go with identifiability there can be no credibility - impersonation, fabrication and defamation are too easy. Without cyber-citizenship only the strong (rich) will be able to assert and defend their identities using the latest technological wonders. In short, the economic, social and political potential of the Net depends on establishing the kinds of rights and responsibilities that were won long ago in the struggles for today's more familiar national citizenship.

The advent of cyber-citizenship does not exclude, in fact it may facilitate the development of both more international and exclusive identities offered by private firms or groups of like-minded individuals. There is still plenty of scope for telecom, travel and credit card companies to offer "gold" status or affinity identities containing additional or special information about you. This, in turn, should help to underscore the global nature of cyber-citizenship and may perhaps pave the way for a universally granted right to an international identity in cyberspace.

A universal global system, not tied to nation states and inviolate from nationalist excuses for invading privacy may perhaps, one day, unite the people of the world in cyberspace in ways we have found difficult on the surface of our small planet. This may end up being the route to extending the hard won rights and privileges of national citizenship, along with the responsibilities and jurisdictional affiliation, to the global level. Indeed, some of these issues are up for discussion at an international conference in November sponsored by the OECD, Finland, the EU and Japan (<http://www.oecd.org/dsti/iccp/e-comm/index.htm>).

Once again, settling the frontier demands that we think beyond the existing frameworks and ways of doing business. We need to find imaginative ways of making sure that the information we share in cyberspace is at least of equal quality to the mundane and easy affirmation in the physical world. Developing the rules that liberate cyberspace radicals to pursue their imaginations also demands that we think about how the basic rights and responsibilities of citizenship, the fruit of many struggles and lessons, can be extended to virtual reality.

Part III: A Vision for the Millenium

Chapter 17: Waiting to Be Wired

Paris - I take being wired for granted. E-mail, web pages and mobile computing are at my fingertips pretty much all of the time and almost everywhere I go. At first, about ten years ago now, I was only connected at the office. Then the link made it to my home computer. Next, most recently, I connected my small, pocket size “digital assistant” to the Net. Finally, some day soon, I’ll get the satellite hook-up. Permanently plugged-in!

Which is fine, until the power source goes. Then, in a flash, I’m banished from the data flow. No e-mail, no web based news update, no search engine to trawl for answers to a pressing question. Without the Net I cannot track down the latest economics article nor the lowest prices for that gizmo I want to buy. I lose touch with many of my colleagues and friends.

I cannot even fall back on the old methods of library based research, snail mail and window shopping. The two universes do not match anymore. Much of what is on the Net is not available in the physical world. And even when it is, the time differential often turns the information, message or product into an old or irrelevant story compared with what I normally get from the Net.

So it is a hassle when my connection goes down. But the inconvenience usually lasts only as long as it takes me to find a plug to recharge the batteries. The same cannot be said for most people, be they in the developed or developing world. Access to the Net is still the preserve of a privileged few. And, it looks like it is going to stay that way for two basic reasons: technology and economics.

Waiting for technological magic

Usually technology is considered one of the primary solutions to a problem like improving access to the Internet. After all, it is argued, look how prices are falling and software improving and bandwidth growing. It is just a matter of time until connecting to the Net is so cheap and easy that everyone will do it without even noticing.

Yes, it is only a matter of time. In the case of the radio almost an entire century.

Marconi started the first commercial radio broadcasts in 1898. In 1997 Trevor Baylis’ (URL: <http://www.britcoun.org/>) inexpensive and simple to operate “clockwork radio” (URL: http://www.seattletimes.com/extra/browse/html97/zair_021297.html), that functions without the need for batteries or an electrical grid, finally made it to market. At last technology has caught up with the needs of billions of users who still cannot afford batteries or simply are not served by an electrical grid.

In large measure the Internet is following in the footsteps of the radio. The technological magic of innovation and more efficient products flow to those who are already served,

Rules for Radicals

connected and adequately trained. The under-served, unconnected and technologically excluded end up waiting, often for a very long time.

Well if technological magic will not save the day, what about the rising tide that lifts all ships - economic development.

Waiting for economic development

An instructive historical precedent can be found in the story of the telephone. Experience with the telephone shows that on average it has taken a country fifty years (http://www.itu.int/ti/publications/WTDR_98/index.htm) to move from having only one phone line per one hundred people to having fifty lines. In this case it is not technical magic but the gradual process of economic development that finally delivers greater teledensity. Today, in the wealthy countries of Europe and North America there is a telephone line for every two people, not to mention a very high diffusion of radios and televisions.

Yet, even in these developed parts of the world two aspects of telecommunications access stand out. First, that governments have stepped in with universal service requirements in order to make sure that the more costly and less profitable segments of the market are also given access at affordable prices. Second, the large pockets of inaccessibility that still remain, due to factors like low income and isolation, are being left even further behind as the expensive and difficult to use Internet technology becomes essential for economic success and social well-being.

Waiting for the trickle down effect of economic development to solve the access problem threatens not only to excessively delay the commercial and social benefits of widespread connectivity, but it also threatens to create even greater polarization between the connected and unconnected.

Why wait for tomorrow?

There is another alternative. Now, while the Net is still in its early days, we can build accessibility goals and mechanisms into the basic global infrastructure. On the technology side extra effort needs to be made to improve ease-of-use and simplicity, allowing access to the Net by people without technocratic backgrounds or even basic literacy. As for universal service, it will be essential to ensure that the Internet's emerging regulatory framework addresses the risks of exclusion and polarization.

Experience with the radio and telephone point the way. Access to cyberspace can be embedded in the rules that are just now being written. If we do it right, no one will be waiting to be wired.

Chapter 18: Planet Net in 1999?

Paris - At first I thought it was a pyramid scheme or just a clever way to get people to sign up for another mailing list. Then, I read the privacy rules very carefully. That reassured me (even though I have no idea what recourse I might have if they broke their rules). Anyhow, I took the plunge and signed-up to a hot new web site called sixdegrees (url: <http://www.sixdegrees.com>). The idea is familiar and comforting. Everyone is connected by at most six links. Meaning, for example, that **you** know someone who knows someone... up to six hops ... that knows **me**. Gee, glad to know we have so many friends in common!?

Only, it turns out I am not as connected to the rest of the world as I thought. I could not find anyone I knew amongst the almost 1.5 million members of sixdegrees and I did not make it into what they call the “big cloud”. Mathematically, if thirty people I know also know thirty additional people then by the time you hit the sixth iteration there are over 21 billion links. Six degrees can be a lot of separation. Of course, in reality, there is probably considerable overlap and most people are still not even wired much less signed up with sixdegrees. So I guess I should not feel too bad. Still, it made me wonder, almost on the eve of a new year, are we really as connected as globalism claims? Does it matter? And is there anything we can do about it aside from joining web chat sites?

How connected are we?

There are two sides to this ledger. On the one hand there are plenty of indicators that point towards closer global integration. For instance there are shared problems such as global warming and common projects such as global electronic commerce. Flows of goods, services, ideas and money are making the connections. People are becoming more inter-dependent, whether they wish to acknowledge it or not. Still, on the other hand, there are many forces that keep us apart like geography and nationalism and culture. Rumours to the contrary distance is not dead. Nor are the resurgent expressions of national sovereignty provoked by the encroachment of, for example, foreign investors or monetary union or global standards to outlaw child-labor. Far from collapsing without a fight, this century’s carefully and often very painfully constructed fortresses of “difference” are resurgent around the world. 1999 could easily be a year of further fragmentation and isolationism.

Does it matter?

For a long time it did not really matter if people were connected much further than their valley. Small, mostly autonomous units of families or tribes or villages could survive from year to year without worrying about anyone beyond their second degree of separation. Today, however, those folks out on the periphery of your fourth, fifth and sixth circles are the ones who produce the toys you buy from China or add to global warming by driving their car down the autobahn or run a fraudulent Internet bank from a well hidden server. We are connected for good and for bad. On the good side are the many material and intellectual advantages that arise from sharing markets and ideas. On

Rules for Radicals

the bad side are the so far uncontrollable side effects like excessive production of CO² that alters the world's climate and exposure to rogue agents that hide from the law - be it of copyright or civil rights - in the outer reaches of a connected globe.

Most of all, being connected matters for the future. The desire for a better, healthier and more creative life calls for more extensive and effective networks. It is through such networks that people are connected to the knowledge they need to overcome famine or find a buyer or cure a disease or write new music. Tomorrow's flourishing electronic commerce and cyberspace communities will depend on easier, less costly, more numerous and diverse connections - all on a global scale. So too will the solutions to global problems that range from dwindling biodiversity to eliminating abuses of basic human rights - like the failure to provide access to primary education for 130 million children ([url: http://www.unicef.org/sowc99](http://www.unicef.org/sowc99)).

Fortunately we have the technological tools to build these networks. The Internet opens up the possibility, but it does not make it a reality. A sixdegrees web site could potentially map the complex links that tie me to the world - from the people that grow and process the food I eat to the lawmakers that create the frameworks that protect me from on-line fraud. But sixdegrees is not intended nor well suited to the task of rendering my entire world transparent. Indeed, there is no reason to expect a commercially driven, private database service to provide the means or motivation to overcome the obstacles that spring from conflicting national interests and the fragmentation born of cultural chauvinism. The Net is a necessary but not sufficient condition for creating links across the barriers that divide us and finding the solutions to the global problems that touch us all. There is an ingredient missing.

Beyond six degrees - the birth of planet Net

Opening up web sites that mimic the classic conversation in a bar - "hey do you know so and so" - is not going to provide the motivation nor the clout needed to create a better future. What is needed are ways of using the Net to share power and make decisions on a planetary basis. A challenge that is more than daunting for the existing power structure and traditional ways of doing business. The current approach to dealing with global issues is to let national politicians duke it out in bi-lateral or multi-lateral negotiations. Naturally it is national not global interest that rules. This system worked fine when few issues were truly worldwide in scope and there was no really practical means for creating global networks. Planet Net opens up new possibilities and imperatives. Just in time!

In fact 1998 has been a good year for spotting signs of a transition towards investing the global level with power and decision making capability. Almost without fanfare, seemingly on the sly with the hope that no one will notice, important concessions have been made by national sovereigns. The glimmers of planet Net in the making were events like the commitment in Buenos Aires to enforcement mechanisms for realizing a system of tradable CO² permits ([url:http://www.iisd.ca/linkages/climate/ba/index.html](http://www.iisd.ca/linkages/climate/ba/index.html)) and the decision by the House of Lords in the United Kingdom to allow a dictator to be judged for his crimes against humanity ([url:http://www.amnesty.org.uk/news/press/releases/25_november_1998-1.shtml](http://www.amnesty.org.uk/news/press/releases/25_november_1998-1.shtml)). Other

Rules for Radicals

signs spring from the need to forge a functional and transparent Net, including preliminary agreements on how to treat taxes on the Internet (url: http://www.oecd.org/daf/fa/e_com/Ottawa.htm), efforts to develop a global certification infrastructure (url: <http://web.unicc.org/untpdc/welcome.html>), and lobbying to make strong cryptographic protection a basic human right (url: http://www.wired.com/news/print_version/politics/story/16768.html?wnpg=all). In the past, treaties amongst sovereign states have ceded national authority by agreeing to do things like reduce tariffs, refrain from nuclear testing or eliminate the use of chemicals that damage the ozone layer. Recent initiatives, reflecting the more global nature of the problems and possibilities, hint at the gradual coalescence of rules, revenue raising potential and enforcement needs at the planetary level.

How far behind these trends will be the call by global citizens for a more direct say in these rules and decisions? No doubt there is still a long way to go. Finding effective ways to express views and make decisions on a planetary basis will take time. After all, it took millennia for today's governments to emerge out of politics rooted in territory and conflicts over the fruits of the Earth. Planet Net is just being born.

Chapter 19: From Domains to Democracy – Governance on the Cyber-Frontier

Paris - Recently I decided to grab a piece of cyberspace “real estate” - a domain name. Finally I was staking a claim - although not like the Gold Rush prospectors who used wooden stakes driven into frozen soil and some string. Instead I cruised the Net, found a registration service, filled out an on-line form with a few, minimal personal details and then coughed up the hefty fee for a two year registration. Check it out, I’m now the proud owner of the domain name: www.riel.net [<http://www.riel.net>]. My own little kingdom (still under construction) on the cyber-frontier.

Strange, it was almost too easy. Not that I want poor service from the registration vendors. Only it seemed to me that a few more rights and responsibilities should go along with my new status as “owner” of a corner of cyberspace. After all, easy come can also be easy go. Do I really control my domain the same way as my house or car? Are there laws and enforcement mechanisms that protect my investment or can the registrar delete my address from the Net’s directory with impunity? Do I have obligations, like being a good neighbor or obeying traffic lights? Can I influence the rules that define my rights and responsibilities, for instance by voting for the legal system I prefer?

Tunnel vision

Unfortunately the answers to these questions remain highly uncertain. Why? Well, perhaps the easiest way to get past the Net’s jargon is to think of the system that makes buying a parcel of land relatively easy and transparent. In the physical world there are a set of laws that regulate the real estate agents, the contracts and the registry office that is charged with defining for legal purposes the location, dimensions and ownership of a particular piece of land.

Out in cyberspace it all goes haywire. As it stands no one provides any consistent legal framework for the real estate agents (the so-called domain name registry services). I might live in France, use a registry service in the United Kingdom and use the routing address to a server in Korea that rents me space for my web pages. The purchase and sale contracts are similarly scattered over multiple jurisdictions. Finally, almost the strangest of all, the central database - the big address book that allows cyberspace to unfold across millions of domains, all transparent to one another with none overlapping - is to be incorporated in California, organized under the Nonprofit Public Benefit Corporation Law [[link here to draft: http://www.iana.org/submitted/sub-contents.html](http://www.iana.org/submitted/sub-contents.html)]. Some people wanted this private company, the Internet Corporation for Assigned Names and Numbers (ICANN) to be incorporated in Delaware, but it looks like California won out.

Okay, I give Silicon Valley and the West Coast spirit a lot of credit for the development of the Net. But, sitting here in Paris it seems more than strange that the Net, with its breathtaking capacity to encompass the globe, should have its planetary status whittled down to a single company running on California’s rules. The governing board of ICANN

Rules for Radicals

promises to be transparent and open. The by-laws [**link to by-laws: <http://www.iana.org/submitted/sub-bylaws.html>**] indicate that “if reasonably practicable the Board shall post notices of special meetings of the Board at least fourteen (14) days prior to the meetings.” How considerate.

It would be funny, if it was not so sad.

Global ambitions, planetary inspiration

Here we are at the end of the millennium, at last capable of developing tools that can embrace our planet Earth. Only it is at this moment that our imagination and aspiration expires. What has happened to the ambitions and dreams that inspired the introduction of a radical constitution and innovative system of governance when America’s frontier was not yet fully mapped?

In the place of the kind of broad vision which creates a durable and powerful framework for economic and social development we get a narrow version of “self-governance”. This path was justified out-loud, by the importance of maintaining the operational status of the database that projects the constellation of cyberspace addresses; and rationalized without saying so, by the daunting prospect of trying to develop world encompassing legal frameworks and governance mechanisms capable of sustaining the Net’s functionality.

True, these are good excuses. The Net’s transparent firmament would cease to exist if the common directory broke down - attacked by hackers or split into fragments by jurisdictional conflicts. The Net is in its infancy, it is vulnerable. Electronic commerce is just starting to take off, crucial economic confidence is only beginning to build. Allowing even the modest hand-off of the Domain Name System (DNS) from US Government responsibility to ICANN to provoke a technical failure would be a catastrophe. No wonder so many of the players, from national governments and international organizations to multi-national corporations and Net activists, shied away from a more ambitious agenda and a more democratic decision making process.

It is also true that the Net’s global nature stretches way beyond the capacity of today’s public political institutions and methods. But it is equally beyond the scope of a small private firm planted in California. Self-governance from such a limited base makes a mockery of democratic principles. For self-governance of the Net to really happen our ambitions need to be global - the extension of universal human rights [**link human rights to: http://www.unhchr.ch/html/menu3/b/a_udhr.htm**] into cyberspace - and the inspiration needs to come from the entire planet - through an open, grass-roots democratic process. When I stake out my patch of the cyber-frontier I need to feel that I have made a commitment, that I have taken on responsibilities and been granted basic human rights. That is what will turn the wild frontier into a thriving community.

Yesterday’s domains were granted to lords by the king. Tomorrow, if we dare to dream, cyberspace domains could be a stepping stone to global citizenship.

Appendix: Dates of publication

Monthly column entitled “Rules for Radicals” for an e-zine, IntellectualCapital.com, from July 1997 to December 1999, now available on-line at:
[<http://web.archive.org/web/20000304223242/www.intellectualcapital.com/bios/bio202.html>]

1. On the Cyberfrontier: Still Waiting for “Hang ‘em High” Cooper (12/16/99)
2. Taxes in Cyberspace: Putting in the Plumbing (10/21/99)
3. Classic Ford Mustangs, the Internet and the Future of the World (09/09/99)
4. Privacy Is Dead! Long live Privacy! (07/08/99)
5. Regulatory Myopia on the Road to Cyberspace (06/10/99)
6. How Real is Virtual? Employment Services on the Internet (05/6/99)
7. Hiring in Cyberspace (03/25/99)
8. Cyberboom: Making It Last (02/4/99)
9. Planet Net in 1999? (12/17/98)
10. Waiting to be Wired (11/12/98)
11. From Domains to Democracy – Governance on the Cyber-Frontier (10/15/98)
12. Homesteading is not a game on the Cyberfrontier (09/7/98)
13. Fences on the Cyberfrontier (07/30/98)
14. Minting Money on the Cyberfrontier (07/2/98)
15. Stuck at the End of the 20th Century (05/28/98)
16. Searching for Tomorrow on the Cyberfrontier (04/30/98)
17. Moral Hazards and Self-Regulation (04/2/98)
18. Daring to Turn the Short-Boom into a Long-Boom (03/5/98)
19. From HELP Hell to Health Help (02/5/98)
20. Resolving the Crypto Wars (12/18/97)
21. Unleashing the Artisans (11/13/97)
22. Sparking a Cyberspace Gold Rush (10/09/97)
23. Rules for Radicals -- Cyber-Citizenship (09/11/97)
24. Rules for Radicals -- Settling the Cyber Frontier (07/17/97)